THE AUK:

A QUARTERLY JOURNAL OF

ORNITHOLOGY.

VOL. XI. OCTOBER, 1894. NO. 4.

POINT PINOS JUNCO (*JUNCO HYEMALIS PINOSUS*).

BY LEVERETT M. LOOMIS.

Plate VII.

POINT PINOS, the locality from which the type series of the Point Pinos Junco was secured, forms the southern headland of Monterey Bay, California. Its outer extremity is guarded by a number of rocky, bastion-like islets, against which the sea is continually battling. Passing crafts are warned from these dangerous rocks by a whistle buoy set far out in the deep water, and by a light situated some distance back from the shore on gently rising ground, which is largely overgrown with 'lupine.' The white light-house is a conspicuous object at sea, standing out in bold relief against the dark green background of Monterey pines that clothe a portion of the mountainous ridge that separates Monterey Bay from Carmelo Bay.

It was among these pines, June 21, 1892, on the light-house reservation that I first saw this Junco—a little company of old and young. They were feeding on the ground, but as I approached they flew into the pines. Their manner and notes

were suggestive of the Slate-colored Junco. During the two following months similar companies were found commonly distributed in the more open places throughout the pine woods. Though late in the season, I heard a number sing, and their songs recalled to my mind the eastern bird as I have heard it at the opening of the first song season during the early northward migrations in upper South Carolina.

The presence of the Point Pinos Junco in this region has long been a matter of record, but as comparison had never been made with specimens from the northwest coast and from the Sierras, its strongly marked characters remained unrecognized in nomenclature until January, 1893, when the writer set them forth in 'The Auk', under the name *Junco pinosus*. Since, the A. O. U. Committee of Nomenclature has ranked it as a subspecies, its name now standing as *Junco hyemalis pinosus*.

That a representative of the *Junco hyemalis* group and other birds of the Cold Temperate Subregion, as the Blue-fronted Jay, should be found breeding on this coast so far south at sea level is not surprising, owing to the peculiar climatic conditions prevailing. The mean temperature (according to local information) is about 60° F. during each of the summer months. Heavy fogs, that almost amount to rain, are also frequent during summer.

The Juncos reported as breeding at Santa Cruz on the opposite side of Monterey Bay and in the mountains of Santa Clara County probably belong to this race. It will be interesting to learn how far south along the coast and how far north in the mountains, in the typical form, its range extends.

A LIST OF THE BIRDS OF THE WET MOUNTAINS, HUERFANO COUNTY, COLORADO.

BY WILLOUGHBY P. LOWE.

TO ORNITHOLOGISTS, the avifauna of high altitudes may be said to always possess a peculiar interest on account of the light it throws on problems of geographical distribution. The following

is a list of all species known to me to inhabit the Wet Mountains, Huerfano County, Colorado, and is part of the result of visits of either long or short duration extending over a period of six years. The observations were made on the western slope, and extend for the distance of about eight miles along the range. The list, though probably incomplete, may be of some service as a furtherance of our knowledge of Colorado birds, and for comparison with Arctic and Alpine avifaunæ in general. All altitudes given are from sea level.

1. **Dendragapus obscurus.** DUSKY GROUSE.—This, the only Grouse found in the above named mountains, is quite common between the altitudes of 8,000 and 11,000 feet. They subsist largely on berries of *Arctostaphylos uva-ursi.*

2. **Columba fasciata.** BAND-TAILED PIGEON.—Abundant between 7,800 and 10,000 feet. The adults feed principally on acorns, whilst the young seem more partial to seeds.

3. **Zenaidura macroura.** MOURNING DOVE.—Common at 7,000; rare at 8,000; in one instance only have I observed it at 10,000 feet.

4. **Cathartes aura.** TURKEY VULTURE.—Frequently seen at 12,000 feet.

5. **Circus hudsonius.** MARSH HAWK.—Most abundant on the plains. I have, however, taken a specimen at 10,000 feet.

6. **Accipiter velox.** SHARP-SHINNED HAWK.—Quite common at 10,000 feet.

7. **Accipiter cooperi.** COOPER'S HAWK.—Not nearly so plentiful as the last. One was shot at 8,800 feet.

8. **Accipiter atricapillus.** AMERICAN GOSHAWK.—Fortunately for *Dendragapus obscurus*, this species is of rather rare occurrence. My highest record is only 9,000 feet.

9. **Buteo borealis.** RED-TAILED HAWK.—I once shot an adult male at 11,000 feet.

10. **Buteo borealis calurus.** WESTERN RED-TAIL.—More abundant than the last. Several specimens taken at 10,000 feet.

11. **Buteo swainsoni.** SWAINSON'S HAWK.—Not a common mountain bird. Breeds, however, as high as 10,000 feet.

12. **Aquila chrysaëtos.** GOLDEN EAGLE.—Not of infrequent occurrence at 11,000 feet.

13. **Falco mexicanus.** PRAIRIE FALCON.—Rare. One was shot at 10,000 feet.

14. **Falco columbarius.** PIGEON HAWK.—Several specimens were taken at 8,500 feet.

15. **Falco richardsonii.** RICHARDSON'S MERLIN.—I once shot an adult male at 8,000 feet.

16. **Falco sparverius.** SPARROW HAWK.—Common. Breeds at 10,000 feet.

17. **Bubo virginianus subarcticus.** WESTERN HORNED OWL.—Not very plentiful. One was shot at 10,000 feet.

18. **Megascops asio maxwelliæ.** ROCKY MOUNTAIN SCREECH OWL.—I once came across a family of the birds in some thick piñon trees at the altitude of 7,800 feet. They are quite common in the foothills.

19. **Glaucidium gnoma.** PYGMY OWL.—Common between the altitudes of 7,800 and 10,000 feet.

20. **Geococcyx californianus.** ROAD-RUNNER.—A rare mountain bird. One, however, was observed at 8,000 feet.

21. **Dryobates villosus hyloscopus.** CABANIS'S WOODPECKER.—Quite common at 10,000 feet.

22. **Dryobates pubescens oroœcus.** BATCHELDER'S WOODPECKER.—Found sparingly at 10,000 feet.

23. **Picoides americanus dorsalis.** ALPINE THREE-TOED WOODPECKER.—Several shot at 9,000 feet. Never observed below 7,500 feet.

24. **Sphyrapicus varius nuchalis.** RED-NAPED SAPSUCKER.—Breeds sparingly at 8,500 feet.

25. **Sphyrapicus thyroideus.** WILLIAMSON'S SAPSUCKER.—Abundant at 10,000 feet, and upwards.

26. **Melanerpes torquatus.** LEWIS'S WOODPECKER.—Breeds at 8,000, and frequently seen at 10,000 feet.

27. **Colaptes cafer.** RED-SHAFTED FLICKER.—Nidificates at 10,000 feet.

28. **Phalænoptilus nuttalli.** POORWILL.—Frequently heard and seen at 10,000 feet.

29. **Chordeiles virginianus henryi.** WESTERN NIGHTHAWK.—Found throughout the summer at 10,000 feet.

30. **Micropus melanoleucus.** WHITE-THROATED SWIFT.—Tolerably common at 10,000 feet.

31. **Trochilus platycercus.** BROAD-TAILED HUMMINGBIRD.—Abundant. Breeds at 10,000 feet. Feeds chiefly on insects, especially small spiders.

32. **Contopus borealis.** OLIVE-SIDED FLYCATCHER.—Nests at 9,500 feet.

33. **Contopus richardsonii.** WESTERN WOOD PEWEE.—Occurs sparingly at 10,000 feet.

34. **Empidonax obscurus.** WRIGHT'S FLYCATCHER.—Tolerably common between the altitudes of 7,500 and 9,000 feet.

35. **Pica pica hudsonica.** AMERICAN MAGPIE.—Abundant in the fall. I have never shot specimens above 10,000 feet.

36. **Cyanocitta stelleri macrolopha.** LONG-CRESTED JAY.—Abundant at 10,000 feet and upwards.

37. **Aphelocoma woodhousei.** WOODHOUSE'S JAY.—Common at 6,000, scarce at 7,000, and never ascends over 8,000 feet.

38. **Perisoreus canadensis capitalis.** ROCKY MOUNTAIN JAY.—Several specimens were procured at 10,500 feet.

39. **Corvus corax sinuatus.** RAVEN.—Of frequent occurrence at 10,000 feet.

40. **Picicorvus columbianus.** CLARKE'S CROW.—Abundant at 10,000 feet.

41. **Cyanocephalus cyanocephalus.** PIÑON JAY.—This destructive bird is found at 9,000 feet, though I have no higher record.

42. **Coccothraustes vespertinus montanus.** WESTERN EVENING GROSBEAK.—I have observed these birds in the early fall at 10,000 feet.

43. **Carpodacus cassini.** CASSIN'S PURPLE FINCH.—I have shot specimens in the fall at 8,500 feet.

44. **Spinus pinus.** PINE FINCH.—Occurs at 10,000 feet.

45. **Junco caniceps.** GRAY-HEADED JUNCO.—Frequently taken at 11,000 feet, at which altitude it breeds yearly.

46. **Junco hyemalis shufeldti.** SHUFELDT'S JUNCO.—A common winter bird at 9,000 feet.

47. **Junco annectens.** PINK-SIDED JUNCO.—Abundant at 8,500 feet.

48. **Pipilo chlorurus.** GREEN-TAILED TOWHEE.—Breeds at 10,000 feet.

49. **Pipilo fuscus mesoleucus.** CAÑON TOWHEE.—Occurs sparingly at 10,000 feet.

50. **Habia melanocephala.** BLACK-HEADED GROSBEAK.—Several were seen at 10,000 feet.

51. **Piranga ludoviciana.** CRIMSON-HEADED TANAGER.—Breeds up to 10,000 feet.

52. **Tachycineta thalassina.** VIOLET-GREEN SWALLOW.—Tolerably common. Breeds at 9,500 feet.

54. **Vireo solitarius plumbeus.** PLUMBEOUS VIREO.—Several specimens were shot at 8,000 feet.

55. **Helminthophila celata.** ORANGE-CROWNED WARBLER.—Tolerably common. Rarely found above 8,000 feet.

56. **Dendroica auduboni.** AUDUBON'S WARBLER.—Common. Breeds at 9,500 feet.

57. **Dendroica townsendi.** TOWNSEND'S WARBLER.—Abundant during the fall migrations between the altitudes of 7,400 and 10,000 feet.

58. **Geothlypis macgillivrayi.** MACGILLIVRAY'S WARBLER.—Tolerably common. Very shy and difficult to procure. I have never found it above 9,000 feet.

59. **Sylvania pusilla.** WILSON'S WARBLER.—Abundant up to 10,000 feet.

60. **Cinclus mexicanus.** AMERICAN DIPPER.—Rare. A pair of the birds were taken by myself at 8,000 feet.

61. **Salpinctes obsoletus.** ROCK WREN.—Not very plentiful. Never observed above 9,000 feet.

62. **Catherpes mexicanus conspersus.** CAÑON WREN.—Occurs sparingly at 8,000 feet.

63. **Troglodytes aëdon aztecus.** WESTERN HOUSE WREN.—Common at 10,000 feet.

64. **Certhia familiaris montana.** ROCKY MOUNTAIN CREEPER.—Common at 10,000 feet.

65. **Sitta carolinensis aculeata.** SLENDER-BILLED NUTHATCH.—Very common at 10,000 feet.

66. **Sitta canadensis.** RED-BREASTED NUTHATCH.—Common at 10,000 feet.

67. **Sitta pygmæa.** PYGMY NUTHATCH.—Very abundant between 7,000 and 10,000 feet.

68. **Parus inornatus griseus.** GRAY TITMOUSE.—Found sparingly at 8,000 feet.

69. **Parus gambeli.** MOUNTAIN CHICKADEE.—This, the most abundant of our Tits, is found at 10,000 feet and upwards.

70. **Parus atricapillus septentrionalis.** LONG-TAILED CHICKADEE.—Does not appear to be found above 8,500 feet.

71. **Psaltriparus plumbeus.** LEAD-COLORED BUSH-TIT.—Occurs only up to 7,800 feet.

72. **Myadestes townsendii.** TOWNSEND'S SOLITAIRE.—Common. Breeds at 9,500 feet.

73. **Turdus aonalaschkæ auduboni.** AUDUBON'S HERMIT THRUSH.—Tolerably common, breeding up to 10,000 feet.

74. **Merula migratoria propinqua.** WESTERN ROBIN.—Common at 8,000 feet.

75. **Sialia mexicana.** WESTERN BLUEBIRD.—Abundant. Breeds as high as 9,500 feet.

76. **Sialia arctica.** MOUNTAIN BLUEBIRD.—Common up to 10,000 feet.

THE YOUNG OF THE RED-SHOULDERED HAWK (*BUTEO LINEATUS*).

BY FRED. H. KENNARD.[1]

ON MAY 26, 1889, I found two young birds of this species in a nest in a pine in West Roxbury, Mass. They were covered with down, and I judged them to be somewhere between two and three weeks old. I took one of them, the larger one, and on May 31, just five days later, I returned and took the other. The first one had his primaries, secondaries, tertiaries and

[1] Read before the Nuttall Ornithological Club, April 2, 1894.

scapulars beginning to grow, and the quills of his wing-coverts, as well as those of his tail-feathers, were just beginning to appear.

The second bird, which I took to be a couple of days the younger, had, when I left him in his nest, barely a quill to be seen; when, however, I returned five days later, all the above mentioned feathers had become well started, and the wing-quills and scapulars were well along; while a few feathers had appeared in the interscapular region.

On June 12, 1893, I procured three young birds alive from another nest in Brookline, Mass. These birds by their subsequent growth proved to be about two days apart in age, and the youngest and smallest of them, which I took to be a male, and which I called 'Pete,' was but two or three days older than the larger specimen I procured in 1889. On this ground I calculated that these three birds must be between three and four weeks old, and probably hatched about the 15th of May; somewhat later than my 1889 birds were hatched.

The subjoined diagram, showing the chronology of the growth of the Hawk's feathers, is the result of the above data, my deductions and notes and measurements taken at the times stated. From June 12 I can guarantee them as accurate, while on the days previous to that they may be only approximate, owing to the uncertain data at hand. From June 12 I show what progress the oldest Hawk made, while previous to that, the lines and dates are made up from the observations on the other two younger Hawks, and from data referring to the two 1889 Hawks.

I called the 1893 Hawks 'Bute' (short for *Buteo*), 'Topsy' and 'Pete.' The first two were older than Pete, and I supposed them then, and from their growth later, to be females. Bute, when I got her, had all the feathers that I have spoken of with regard to the 1889 Hawks, well developed. Her back feathers were also well along and had spread upwards and downwards, and there were, too, quite a lot of feathers on her breast. During the week June 12–18, inclusive, all the rest of her feathers either got well under way, or appeared, as shown by the diagram.

Topsy proved at first, by accurate observation, to be exactly two days behind Bute in the growth of her feathers, though she

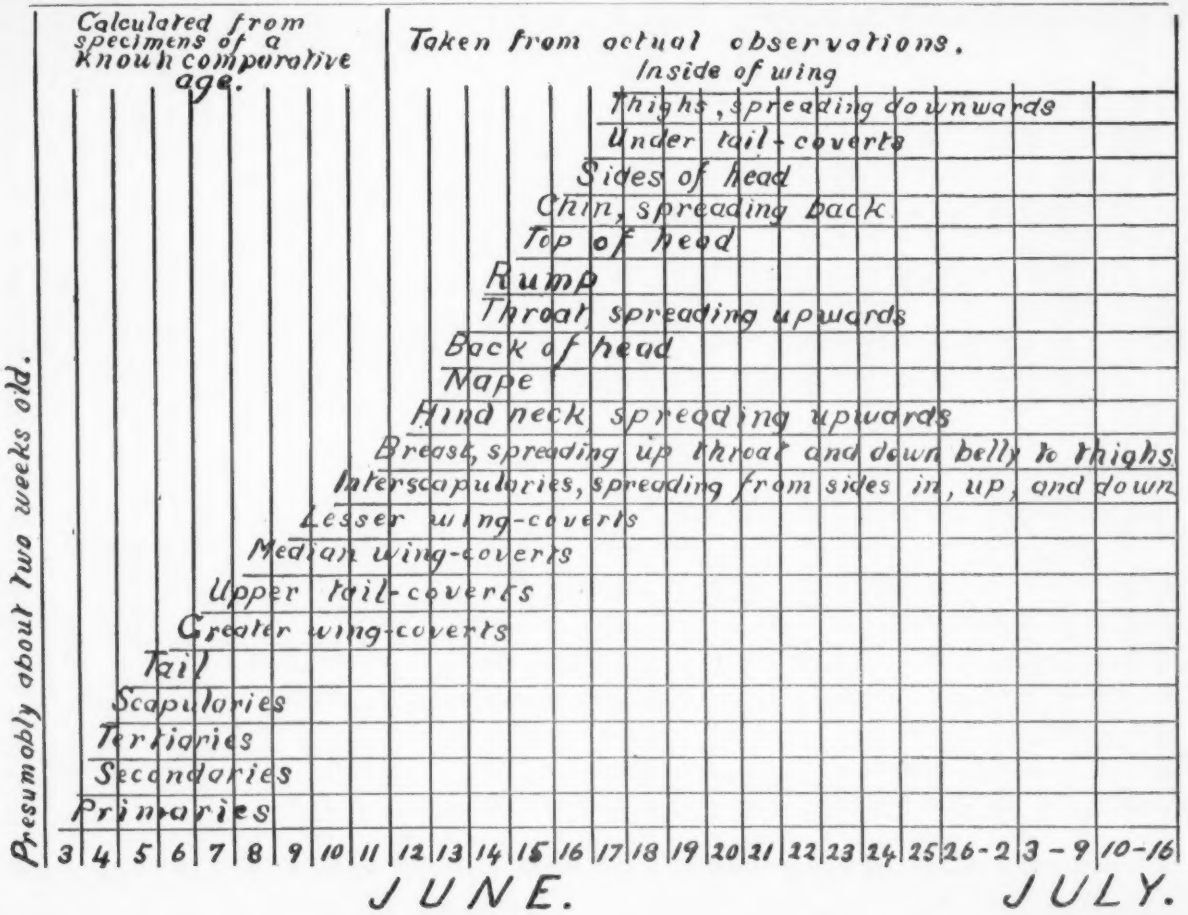


Diagram illustrating Growth of Feathers in Young Hawks.

caught up with her and even went ahead of her later. Pete was about two days behind Topsy when I found him; and though at one time he started to catch up, he finally dropped farther and farther behind.

As they grew, their feathers spread from the interscapular region upwards over the hind neck, nape, and back of the head, and at the same time backwards over the rump, towards the upper tail-coverts, which were already well grown. Their breasts, too, became more and more feathered, and these feathers spread upwards over their throats and chins, and the sides of their heads, as well as downwards over their bellies and sides, to meet their under tail-coverts, which had become well grown in the meantime. Almost the last parts to be covered were their thighs, which only became so when the growth on their bellies reached and extended down them. The growth under their wings, which came last, started at their finger tips and worked backwards towards their shoulders, finally meeting the growth on their sides.

The figures in the subsequent pages were calculated from measurements taken at certain intervals upon each Hawk. I measured their length from bill to tail; their extent from tip to tip; the length of the fourth primary, and of the middle tail-feather. From these measurements I could easily compute the growth of each Hawk per day, as well as the average growth of the three, which is also shown.

TABLES SHOWING GROWTH IN THREE YOUNG RED-SHOULDERED HAWKS.[1]

Name.	*Date.*	*Length.*	*Extent.*	*4th Primary.*	*Tail-feathers.*
Bute,	June 12, 1893, 4 P.M.	12.00	26.00	4.00	2.50
Topsy,	" " " "	12.00	26.00	4.00	2.25
Pete,	" " " "	12.00	22.00	3.00	1.75
Bute,	" 14, " "	12.75	27.00	4.75	3.00
Topsy,	" " " "	12.75	26.50	4.37	2.87
Pete,	" " " "	11.75	23.50	4.00	2.25
Bute,	" 16, " 1 P.M.	13.50	28.50	5.50	3.50
Topsy,	" " " "	13.75	28.50	4.75	3.25
Pete,	" " " "	12.75	25.50	4.25	2.75
Bute,	" 19, " 6 P.M.	14.50	30.50	6.00	4.25
Topsy,	" " " "	14.75	31.00	6.00	4.13
Pete,	" " " "	13.75	29.00	5.00	3.50

Name.	*Date.*	*Length.*	*Extent.*	*4th Primary.*	*Tail-feathers.*
Bute,	June 25, 1893 3 P.M.	16.00	34.50	7.50	5.25
Topsy,	" " " "	16.50	35.50	7.50	5.25
Pete,	" " " "	15.25	32.50	6.75	5.00
Bute,	July 1, " 5 P.M.	17.00	36.00	8.00	6.25
Topsy,	" " " "	17.50	36.25	8.25	6.57
Pete,	" " " "	16.25	34.75	8.00	6.25
Bute,	July 9, " 7 P.M.	18.00	38.00	9.25	7.50
Topsy,	" " " "	18.00	38.50	9.25	7.50
Pete,	" " " "	17.00	35.50	9.00	7.00
Bute,	July 16, " 5.30 P.M.	18.25	41.00	10.00	8.00
Topsy,	" " " "	18.50	41.00	10.00	8.00
Pete,	" " " "	Dead			

[1] Measurements in inches.—These measurements, made at intervals as above, are as nearly accurate as the temper and strength of the Hawks would allow.

GROWTH PER DAY IN INCHES.

	Number of days.	*Length.*	*Extent.*	*4th Primary.*	*Tail-feathers.*
Bute,	June 13–14.	.38	.50	.38	.25
	" 15–16.	.38	.75	.38	.25
	" 17–19.	.33	.67	.16	.25
	" 20–25.	.25	.67	.25	.16
	" 26–July 1.	.17	.25	.08	.16
	July 2–9.	.13	.25	.16	.16
	" 10–16.	.23	.43	.11	.07
Topsy,	June 13–14.	.38	.25	.19	.31
	" 15–16.	.50	1.00	.19	.19
	" 17–19.	.33	.83	.42	.28
	" 20–25.	.28	.75	.25	.19
	" 26–July 1.	.17	.12	.13	.25
	July 2–9.	.06	.13	.13	.29
	" 10–16.	.07	.08	.11	.07
Pete,	June 13–14.	.38	.50	.50	.25
	" 15–16.	.50	1.00	.12	.25
	" 17–19.	.33	1.06	.12	.12
	" 20–25.	.25	.58	.29	.25
	" 26–July 1.	.16	.58	.21	.21
	July 2–9.[1]	.09	.09	.12	.09
	" 10–16.[2]				

[1] Sick. [2] Dead.

AVERAGE GROWTH PER DAY.[1]

Days.	*Length.*	*Extent.*	*4th Primary.*	*Tail.*
June 13–14.	.38	.50—	.38—	.25+
" 15–16.	.50—	1.00—	.62	.25+
" 17–19.	.33	1.00—	.25+	.25—
" 20–25.	.25+	.67	.25—	.20+
" 26–July 1.	.16+	.25+	.16	.20—
July 2–9.	.12+	.25+	.12+	.12
" 10–16.	.16+	.25+	.12+	.06+

Of course these figures ought not be taken as absolutely accurate, on account of the difficulty of obtaining anything approaching accuracy. It is hard even for two people to measure a biting, screaming, struggling, clawing Hawk, even under the most propitious of circumstances.

When I first disturbed my 1889 Hawks, they were very vociferous and screamed loudly, just as their parents often do; but when I first got my 1893 Hawks they were very quiet and retiring, only peeping occasionally, and keeping their heads down, and if possible under each other, or in the corner of their box. They did this for several days, until they had gotten used to me, and for some time later, if they were scared in any way, they would turn about with their heads low down and pointed away from me at the corner of their box.

The first day I procured them I put them in a soap box, perhaps half full of hay, and placed it on a shelf in front of an open window in a room in my barn. I was careful for some time about their temperature, and opened or shut the window or covered their box with a blanket, as the weather seemed to warrant. For the first twenty-four hours they absolutely refused to eat of their own accord, and I was forced to stuff their crops full of raw beef, cut up for the purpose, three times a day. However, on the 13th of June, the second day I had them, both Bute and Topsy seemed glad, occasionally, to pick pieces of meat out of my hand, though I still had to stuff Pete's crop.

---

[1] This table shows approximately the average growth per day of the three Hawks during the time given in the first column, the measurements being taken on the last day on each line.

Pete was not averaged into the last two lines, as he was at first sickly, and slow of growth, and then died.

The sign — means less than; and the sign + means more than.

Both Bute and Topsy were very quiet at first, Topsy particularly so, but Pete was both active and noisy, and gave me a fair idea of what he was going to turn out to be.

June 15 I was surprised in the afternoon to find Bute seated upon the edge of his box philosophically considering the landscape outside his window. How he managed to get there I do not know, for though the oldest and strongest of the three, he was still too weak to stand more than a minute at a time. I then concluded to take them out of the box, both because Bute could climb out of the box himself, and also because the box was fast becoming very dirty, on account of their copious evacuations which were kept about them by the high sides of their box. So instead of a box, I made them a nest of hay, on the shelf, which would allow of their getting up and walking around, and which was more cleanly and airy.

Their method of evacuating was most interesting, showing as it did, their manner of keeping their nest comparatively clean without aid from their parents.

They would invariably turn their heads towards the centre of their nest, and, elevating their tail ends, would project their droppings with a forcible and audible sound, several feet away from the nest. I measured the distance to several that had fallen on their shelf over four feet from their owner, and some on the floor, which was eighteen inches below the shelf, were over six feet from the edge of the nest.

As the birds grew older, and were able to sit upon their perches, their evacuations became less forcible, less frequent, and less copious.

On June 16 I concluded to feed them but twice a day, instead of three times, as they were often obstinate about taking their food and required stuffing, and I judged that a little wholesome hunger might do them good.

They had, in the last four days, not only grown feathers so fast that you could almost see them grow, but they had also become much stronger on their feet, and livelier generally. Bute, as may be seen by the diagram, was almost covered with feathers, and Topsy and Pete were following along just two days behind relatively as to their growth and plumage. It was at this time that Bute grew the fastest, while Topsy and Pete reached their

maximum rates of growth a little later, and from this period of maximum growth they all gradually fell back a little at a time, until I went away from them on the 16th of July.

On June 20 I made up my mind that Bute was getting to be quite a bird. She had on several occasions objected to being fed, thinking perhaps she was too old for such childishness, and on this day she utterly refused to eat at all, when I held out food for her to take; and bit and screamed and clawed frightfully when I attempted to force her to swallow. I finally had to give in and concluded to let her go hungry.

I built some perches, this day, and on placing Bute on one of them was surprised to see her flop off, down to her nest about fifteen inches away; she was evidently beginning to learn the use of her wings, and would also spread them when she ran up and down her shelf; she was also learning how to look angry, for upon my bothering her in any way, she would raise her head and back feathers and extend her wings in a drooping position, looking very fierce, even at that early age.

On June 21 I found that Bute had concluded to eat for herself, for several pieces of meat that I had left on her plate the day before had disappeared, and were only accounted for by a noticeable swelling in her crop. I caught her later in the same day, with a piece of meat under her foot tearing and eating it in a very ferocious and independent manner.

Topsy and Pete still ate as usual, and seemed little inclined to follow in Bute's footsteps. From this time Bute seldom would take anything from my hand and absolutely refused to be stuffed, and so either fed herself or went hungry.

On June 25 I noticed that Topsy was rather getting ahead of Bute in size, and I could not help inferring that this relative change might be directly referable to Bute's independence on the food question, and the result of consequent lack of nourishment on her part.

June 27 I took Topsy for an airing. I chose her because she was most tractable. Bute felt her oats too much and was too wild and lively, while poor little Pete, with his ugly, noisy disposition was still too weak on his legs to allow of much running about. At first I carried Topsy on my fore-arm, but finding that my sleeves were not impervious to her very sharp talons I con-

cluded to carry her on a short stick instead. I took her out on the lawn, and upon putting her down, she sat still for a few minutes, and then spreading her wings gave a series of long flopping hops; then she sat still for a time, apparently wrapt in thought. Her first appearance having been noted by several birds in the vicinity, she had by this time plenty of food for thought, and plenty to look at too. A very saucy Blue Jay had started the racket, and he had been backed up immediately by lots of Robins, English Sparrows and 'Chippies,' and by the time she had gotten through hopping, Orioles, Grosbeaks, and even one little Least Flycatcher had joined in the mob, and if Topsy moved in any way except to turn her head, she was immediately assailed by a dozen different birds from as many directions. She, however, except to watch them occasionally, appeared to pay but little attention to them. From this time on I took her out as regularly as possible, not only to exercise her but to watch her and the antics of the mob that invariably followed. She became a great pet, never behaving badly in any way, and was always ready to eat from my hand if I offered her anything, though she was perfectly well able to help herself to food whenever she cared to.

Bute continued to be independent and untamable, and both she and Topsy could fly around their room, from perch to perch, in very good style by the end of June.

Pete, however, remained incorrigible; he seldom if ever ate by himself, and would hardly ever eat from my hand, and invariably resented being stuffed. I remember particularly one tussel I had with him on the first of July. He was very ugly, and I tried what slapping his head would do, as discipline. He screamed fearfully, so much so that some of the neighbors came in to see what the matter was. He bit my finger and tried his best to claw me, striking at me with his feet. He erected his head, neck and interscapular feathers, and even ruffled his breast feathers and drooped his wings. This last was the sign of extreme rage, and his position for active defence.

I took Topsy out as usual, on July 1, and though she had all the usual mob of birds around her, there were also a couple of Vireos, a Golden-winged Woodpecker, and a couple of Blue Jays, that seemed particularly active in the assault. The Woodpecker approached very close to her, and the Blue Jays actually flew

against her head, trying seemingly to pick her eyes out. I noticed, too, that upon the appearance of the Blue Jays, the smaller birds seemed to pay much more attention to them than to Topsy. I gathered in one of the Jays, and wounded an English Sparrow which I took up to the Hawks' room and introduced to Bute. Bute had never in her life seen a live bird. Nevertheless, as soon as the Sparrow attempted to flutter across the room, it had not gotten two feet before Bute had swooped down upon it from a high perch, in the most approved Hawk fashion. She grabbed it with both feet, and upon my retiring to a distance, proceeded to tear the feathers from off its neck and eat that portion of its anatomy. While doing so, she showed up her importance to the best of her ability by erecting or extending each and every feather she had, even her tail being spread to its fullest breadth, and her wings drooping down on each side of her till they touched the shelf on which she stood.

Topsy had for some time been catching up with Bute in cleverness, as well as growth, and on July 2, when I gave her a piece of the meat that was too big for her to eat whole, she took it in her talons and tore it with her beak. Pete, too, had been caught lately feeding himself out of the plate in which I usually kept their food, so I now felt relieved of the responsibility of feeding any of them, except for pleasure.

On July 7, although Pete had been feeling pretty well all the week, and although he was still growing, though perhaps not so fast as his sisters, I decided to gather him to his fathers. He had been growing weaker and weaker, and was hardly able to stand, much less to walk. When he tried to stand it was pitiable to see him; a sort of creeping paralysis seemed to have seized him. So I put a pistol ball mercifully through him and ended his ugly, noisy, contrary existence.

On this same day I was compelled to clip one of Topsy's wings; she had caught the trick of late of flopping from branch to branch, up any tree that came handy, and it had become only a question of time until she should get up so far that I could not get her down, or until she should fly away entirely.

On July 16 I went away for the summer, and, I am sorry to say, bade good-bye to my Hawks forever. They had the best care that my family could give them, but in spite of this they both died

before I returned in the autumn, and apparently of the same disease which sickened Pete. Bute died about three weeks after my departure, and Topsy about three weeks later. I was sorry to lose Bute for I valued her, but I was really sad at Topsy's demise—she had been an admirable pet from beginning to end, always quiet and docile, with all the virtues and none of the vices of her brother and sister, and she had become quite a companion.

Of course their food (they lived entirely on raw beef except a very occasional sparrow) probably did not agree with them, but I lay the cause of their death more to their want of freedom, and consequent lack of exercise. Pete was too young perhaps when I took him, and on account of his contrariness did not get the advantages the others did. He got no exercise whatever, and sickened long before the others showed any unhealthy signs. Bute was intractable, and though she could fly around a room and get some exercise that way, she seldom did. Topsy, on the other hand, got more or less of open-air freedom, and I feel sure would have lived had I been home to take her out.

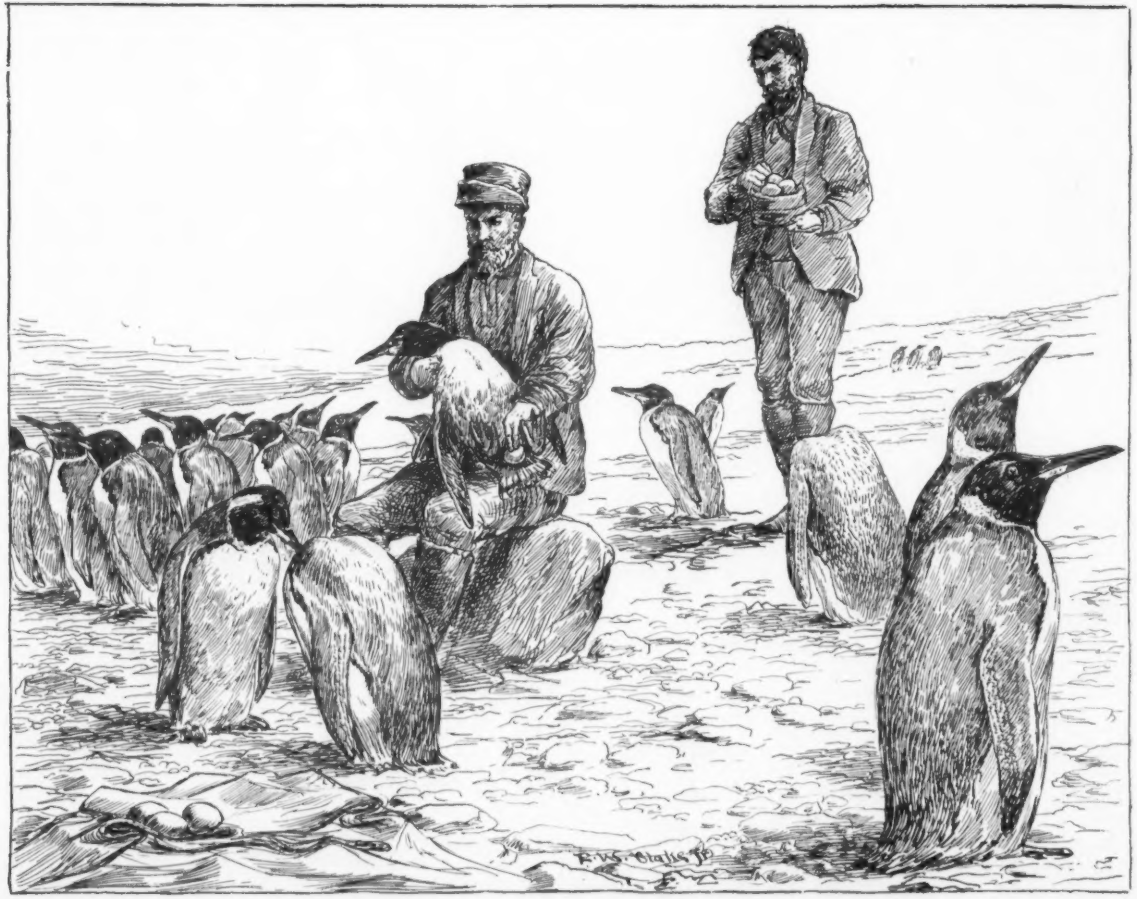
In ending I would suggest that if any one wants more accurate data obtained under more natural conditions than the above, they should find some Hawk's nest of easy access, and climb up to it each day for regular data. I leave this task to some one else, however, as I have neither the time nor the patience.

BREEDING HABITS OF THE KING PENGUIN (*APTENODYTES LONGIROSTRIS*).

BY R. G. HAZARD.

Plate VIII.

IN 'BULLETIN No. 2' of the United States National Museum (p. 41), Dr. J. H. Kidder mentions a curious habit of the King Penguin (*Aptenodytes longirostris*) upon the authority of Captain Joseph J. Fuller. He says: "Captain Fuller, of the schooner Roswell King, informs me . . . . that they [the King



KING PENGUIN (APTENODYTES LONGIROSTRIS).

(Drawn from a Photograph.)

Penguins] build no nests whatever, carrying the egg about in a pouch between the legs, and only laying it down for the purpose of changing it from male to female."

This 'Bulletin No. 2' was printed in 1875. In 1891 I had the good fortune to meet this same Captain Joseph J. Fuller, then about to sail for the Antarctic as Master of the sealing schooner 'Francis Allyn.' After some experimenting with cameras to find one best suited to the bad conditions of the Antarctic, we found a camera combining the essential virtues and agreed that one principal point to settle should be this one as to the egg-carrying habits of the Penguins. If possible a King Penguin was to be photographed so as to show the egg in position in the sac. Captain Fuller told me he felt sure he could manage the camera, which was fitted with a roll holder and films, but greatly feared the dark and foggy weather prevailing would hinder the best results.

About ten months later I received four rolls of films by schooner from St. Helena, where the 'Francis Allyn' had transhipped her catch of skins. They were Eastman films and many were excellent, especially such as had been exposed in sunlight at Cape Town, St. Helena, and Tristan d'Acunha. But the special efforts made to photograph seals, sea elephants, Penguins of all degrees, Skuas (*Buphagus skua antarcticus*), Johnny Rooks (*Senex australis*), Sheath-bills (*Chionis minor*), and many another strange and interesting denizen of that comfortless Antarctic region were all failures, in part at least. The weather was no doubt largely responsible for this, and in many cases there was barely light enough to show a horizon line. The large percentage of failures was relieved by the fact that some of the best and most decipherable among them bore precisely upon the point stated by Dr. Kidder upon the authority of Captain Fuller. The photograph from which Mr. E. Whitney Blake has kindly made a careful scale drawing now reproduced, was one of the best of three, all meant to show the egg *in* the pouch. All three were taken on Kerguelen's Island, during January, 1894, at which time the whole 'rookery' of Penguins was incubating. While the sailors caught the birds, then not a hard task, Captain Fuller photographed them, and while very bad photographically, it is possible to decipher at least one of them, as I think the drawing

proves. A careful inspection of the original shows the larger end of the egg, which barely projects from the external sac, which holds it firmly between the thighs of the bird, a King Penguin. The bird reclines in its position in the sailor's arms, while his finger holds the egg securely, to prevent the bird dropping it. The soles of the Penguin's feet, if one may so speak, are turned up toward the camera, and are clearly defined against the breast. Mr. Blake's drawing shows all this and more.

The Penguins, as shown in the photograph, stand dismally in pessimistic attitudes, scornful and disgusted at the intrusion, highly disapproving and indignant over the outrage with the camera. They seem to be wondering over the strange times on which they have fallen.

Upon Captain Fuller's return, nearly eighteen months after his departure, he brought me a most interesting mass of material, including a fine series of the eggs of *Chionis minor*, with skins of this singular bird, which is neither Pigeon nor Gull, yet partakes of the nature of each. He also secured eggs of the Southern Skua (*Buphagus skua antarcticus*), Wandering Albatross (*Diomedea exulans*), and others, all of which I retain in my cabinet.

If the accompanying drawing should be held to have settled this question, I shall hope to be allowed to convey the information to Captain Fuller, who is at present pursuing his isolated, arduous life among the seals, and to whom the credit should belong. I myself am entirely convinced from the development of my plate, that the case is proved beyond any question.

PLUMAGES OF THE YOUNG HOODED WARBLER.

BY WILLIAM PALMER.

SEVERAL young male Hooded Warblers (*Sylvania mitrata*) collected by myself in Hanover County, Virginia, in July, 1892, differed so much from published descriptions that I called attention to them in a paper read at the Washington meeting of the A. O. U. of that year. Hoping to secure a better series,

publication was delayed, so that I have now before me a series of twenty-six specimens, illustrating the young of the year after leaving the nest, and all collected in Hanover and King William Counties, Virginia, besides a large series of adults from the same and other localities.

I quote below various statements that I have found in the literature of the species, having italicized the parts which differ from the facts as illustrated in my specimens.

Professor Baird, in the Pacific R. R. Report (Vol. IX, p. 292), says: "An immature *male* differs from that described above by having the black of the head restricted to a margin of the yellow on the top and sides, and a faint indication of the same on the throat."

In the Hist. N. Am. Birds (p. 314) he also says: "A young *male* in second year (2245, Carlisle, Penn., May) is similar to the female, but the hood is sharply defined anteriorly, though only bordered with black, the olive-green reaching forward almost to the yellow; there are very slight indications of black on the throat. Apparently the male of this species does not attain the full plumage until the third year."

Dr. J. M. Wheaton (Report on the Birds of Ohio, 1882, p. 279) describes a young *male* taken at Columbus, Ohio, August 25, 1874, as follows: "Above, yellow-olive, concealed yellow from bill to eyes; feathers of crown and occiput with dark plumbeous bases and centers, some of the feathers of sides of crown with scarcely concealed black tips, line from bill over and around eye bright lemon yellow, separated from the uniform yellow of throat, breast, and abdomen, by dusky lores and olive-yellow auriculars; under tail coverts very light yellow. Tail spots as in the adult. Bill very pale, dusky shaded."

This description agrees in some respects with Professor Baird's specimen mentioned above, obtained by him at Carlisle, Pa., May 7, 1845, and labeled as a male by the collector. I have no hesitation whatever in calling Dr. Wheaton's bird a young female of the year, and Professor Baird's specimen a female at least two years old: the error of sexing having been caused by the fact that the supra-renal capsules were mistaken for testes. Unfortunately this error is only too easily possible when birds are left for some time before skinning or when injured internally.

Dr. Merriam, in his 'Review of the Birds of Connecticut' (Trans. Conn. Academy, Vol. IV, 1877, p. 26), speaks of this species as follows: "From the limited amount of material I have been able to examine, and from the notes given me by Mr. Sage and Mr. Bicknell, I am inclined to believe that the female bird, *like the male, is several years — at least three — in attaining its full plumage; . . . .*"

Dr. E. A. Mearns (Bull. Nutt. Orn. Club, Vol. III, p. 72) quotes the above from Dr. Merriam and adds: "With a large series of specimens before me, I can fully indorse Mr. Merriam's views. The females of the second summer *are entirely without any black upon the head*, and I have frequently found them sitting upon their eggs in this condition. Males of the same age show very evident *traces* of black."

Mr. Ridgway says (Manual, 1887, p. 527): "Young in first autumn: *similar to adult female, without black on head.*"

He also, in the 'Birds of Illinois' (p. 175) quotes Dr. Merriam and Dr. Mearns as above, and on page 173 says: "Young: *no black whatever about the head.*"

Dr. Coues (Key, 1892, p. 313) describes the young as follows: "♀, adult, and young ♂, with the *black restricted or interrupted, if not wholly wanting, as it is in the earlier stages, when the parts concerned are simply colored to correspond with the upper and under surfaces of the bird.* Hood said to be not perfected until the *third* year, and to be finally acquired, in the fulness of its extent if not in the purity of the black, by the female."

The only approximately correct statement that I have been able to find is that of Messrs. Samuel F. Rathbun and Frank S. Wright (Bull. Nutt. Orn. Club, Vol. IV, p. 117) as follows: "We secured female birds with the black gradating from a single spot to a full tracing of the hood. We also found young males of the year with the black as *dense and glossy* and the yellow as rich, as in the best adults; yet the little 'spike-tails' scarcely exceeded half an inch in length, and their peculiar plumage marked them as young."

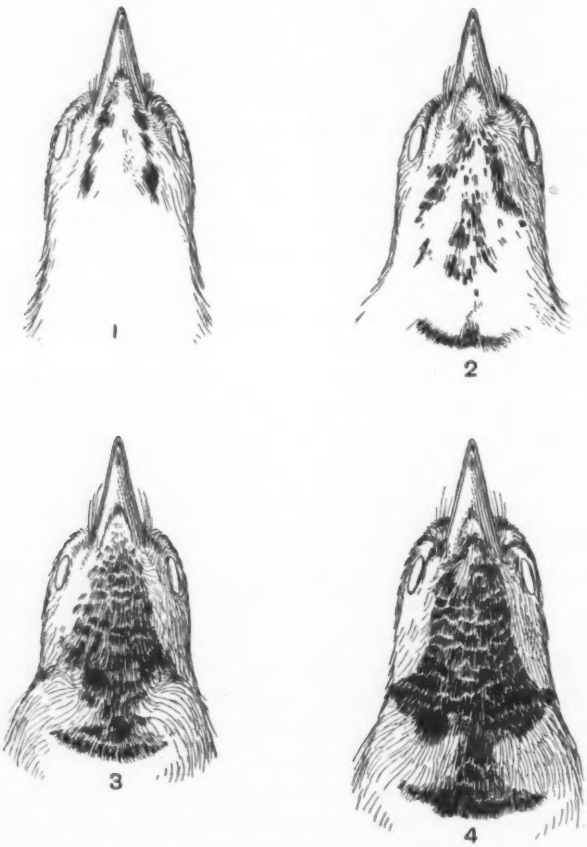
It seems most improbable that such a difference should exist between the specimens mentioned above and those described below, which were all collected by me in Virginia.

Young birds of both sexes are identical in coloration when they leave the nest, the body feathers being a pale slate color with more or less brownish drab tips, appearing darker where the feathers are thickest; such as across the chest, on the sides of the head over the eyes, in the center of the back and on the wings. The tips of the back feathers are decidedly reddish. Feathers of the underparts below the breast nearly white, tipped with yellowish. Ear-coverts slightly yellowish; edges of wing-coverts distinct and pale reddish. Rictal bristles very short. Tail-feathers in the female 1.13 inches, in the male 1.38 inches. Inner webs of three outer tail-feathers blotched with white. Upon lifting the breast feathers the yellow pin feathers of the new plumage are easily seen. No. 133223, male juv., and No. 133224, U. S. N. M. Coll., female juv., Studley, Hanover County, Virginia, June 25, 1894. Both of the above were from the same nest, the parents also being secured, the black on the female being confined to a spot on each side of the crown; evidently a bird of the previous year.

The first true body feathers to appear in both sexes are a line of yellow on each side of the breast, as seen in so many young birds, and at the same time a few appear as pin feathers within the area enclosed by the two branches of the lower mandible. A series of fifteen males and eleven females show well the various stages from the nestling to the fully fledged young.

No. 133225, male juv., June 25, 1894, Studley, Hanover County, Virginia, U. S. N. M. Coll., has considerable green on the back below the neck; the yellow of the abdomen is decided and exists as two stripes, separated by a broader division of the nestling plumage. A slight line of yellow appears extending backwards from the posterior corner of the eye. The area between the eye and bill is also yellow, the wiry tips of the feathers being black; rictal feathers longer but not yet fully grown. The yellow of the lores meets under the eyes a faint line of yellow extending from the edge of the feathering on the lower mandible to past the eye and almost encircling the ear-coverts. The first black appears in the form of two lines under the throat as shown in Fig. 1. Pin feathers are numerous on a line in the center of the crown, the posterior end of which shows the tips of new black feathers. Wing-coverts unchanged. Tail 1.88 inches long.

No. 133226, same sex and date as above, represents a step further, the under parts being yellow except for the center and abdomen. The increased area of the black of the throat is shown in Fig. 2, the black crescent on the breast being joined posteriorly to a crescent of yellow, both being separated from the yellow side stripes by the remaining nestling feathers. More



FIGS. 1–4. YOUNG HOODED WARBLER.

green feathers have appeared on the back and shoulders, the first plumage having mostly disappeared on those parts. The black hood has further developed and presents the general appearance of the cap as seen in an adult male Wilson's Black-

cap, though still showing some pin feathers, the anterior edge being more or less irregular in outline. When first collected the black feathers on the posterior portion of the crown patch of this specimen showed beautifully the continuous development of the feathers; several of the new black feathers being tipped with the pale nestling feathers, which also bore on their tips the long smoky-black down. These black feathers of the crown and throat are very dull in color, and are minutely tipped with yellow on the throat and with green on the crown. The tips of a few black feathers show behind the ears, between the hood and throat patches, but do not meet either. The stiff yellow feathers between the eye and bill are decidedly tipped with black, appearing much darker than in the same area in adult birds, this being due to the crowding of the new feathers. Yellow feathers have developed on the forehead but are obscured by the nestling plumage; the most advanced show black tips. Yellow feathers have also appeared nearly encircling the eye, while the posterior end of the supra-auricular region is also yellowish and meets the yellow feathers around the ear-coverts, thus giving the sides of the face an almost yellow appearance. The lower back is completely covered with the green feathers of the new plumage on which the tips of the nestling feathers remaining on the neck show quite reddish. Tail 2.19 inches long. The nestling wing-coverts have dropped out and new ones have not yet appeared.

No. 133227, male juv., same date as above, is still further advanced: the entire back except the neck is covered with the new plumage; the yellow of the underparts occupies a larger area and is almost connected across the chest with the breast patch, the yellow of the underparts thus appearing somewhat as an inverted U. The hood is better developed, the feathers being nearly half grown, smoky-black in color, each bordered with a narrow edge of green, the colored margin being distinctly discernible. The throat patch, as shown in Fig. 3, has increased in size and is connected with the hood by a partially developed line of black surrounding the auriculars. Yellow feathers have encircled the eye, the entire face has strengthened in color and now presents the same pattern as in the adult male, except that the center and anterior portion of the auriculars are still in the

nestling phase. The sides of the neck and the region between the hood and auriculars are still covered by the short persistent feathers of the nestling plumage. Tail 2.31 inches long, thus equaling the adult. Yellow under tail-coverts just beginning to appear.

No. 133228, male juv., June 29, 1894, Aylett's, King William County, Virginia, is still older, the throat patch is larger, as shown in Fig. 4, and a better defined black line connects it with the hood. Pale lemon-yellow under tail-coverts have now appeared, but the nestling phase still shows almost entirely around the neck, on the abdomen, down the center of the breast, on the central part of the ear-coverts, and along the sides of the hood.

My series of young females does not exactly correspond in age to the various stages of young males as above.

No. 133229, female juv., is a sister of No. 133227, but of course differs in the absence of black: the throat and breast are entirely of a pale lemon-yellow interrupted on the sides of the head, behind the eyes, by the remains of the nestling plumage. Top of head a duller green than the back, with the rump brighter than either; the sides of the breast are still divided in the center by the persistent remains of the nestling plumage, which also shows entirely around the neck, except on the throat. There is a break in the new feathers on each side of the breast, so that the yellow of the underparts appears in three nearly confluent patches — one on the throat and chin, and one on each side of the under body; yellowish under tail-coverts well developed.

It now remains to describe the full plumage of the young of both sexes, which so far as I am aware has never been done. A comparison with many specimens of adult birds show that the pattern of coloration of the young male in the first autumn is almost identical with that of the adult male, while in the young female it is identical with those specimens of adult females showing the least amount of black on the head; a mere spot, present in all specimens that I have examined.

Young male, fully fledged, No. 127313, U. S. N. M. Coll., Studley, Hanover County, Virginia, July 6, 1892. Entire plumage of same pattern as adult males; but black less intense, the ends of the feathers being

minutely tipped on the throat and chest with yellow, on the sides and crown with green; yellow of head minutely tipped with blackish, especially on the lores, where the black nearly obscures the yellow. Entire underparts pale lemon-yellow, greenish on sides; wings and tail as in adults, but lower wing-coverts slightly tipped with yellowish. Back and sides show less intense olive-green than the middle and lower back; three outer tail-feathers blotched on inner webs with white, that of the third being smaller and restricted to the end. Feet and tarsi paler than in adults, as is also the bill, especially the lower mandible, which has only a little black beneath near the tip.

Young female, fully fledged, No. 133230, U. S. N. M. Coll., Studley, Hanover County, Virginia, July, 1894. Entire plumage similar in pattern to those spring and summer females showing a least amount of black on head. Yellow of sides of face obscured by the greenish tips of the feathers, being especially darker on the ear-coverts. Green of head continuous in the center to the bill, completely obscuring the yellow bases of the forehead feathers. Lores lemon-yellow but densely tipped with black, appearing much darker than in adults. Yellow around eyes well defined and continuing backwards as a broad stripe over center of auriculars. Underparts uniform palish lemon-yellow; sides greenish; throat paler with a greenish darkening just below showing very faintly the outlines of a breast patch. A little above and behind the eyes are several nearly concealed black feathers with green tips. Bill and feet as in the young male; tail similar but with the inner blotch nearly surrounded with dark color.

A description of a bird is necessarily confined to its plumage conditions at the time of its being collected; hence I have attempted above to give some idea of the rapid change that this species undergoes from the nestling to an apparently full fledged bird.[1] Additional specimens kindly collected for me during July and August, by my young friend, Master P. Henry Aylett, of King William County, together with others collected by myself in Hanover and King William Counties, Virginia, during the latter part of August of this year, indicate that a further, but much slower change has taken place. Upon lifting the feathers of the last two specimens described above, a few pin feathers will be found which might casually be considered as the last feathers to complete the change from the nestling. A comparison of these and others of similar date with older young birds

[1] It was impossible to get the exact time. None in the nestling plumage were seen after June 25, or like Figs. 1 and 2 after June 30. None like Figs. 3 and 4 were seen after July 4, and no fully changed birds were seen before the same date.

collected during the latter part of July and in August in the same localities, shows how the change has been effected; the yellow and green parts have become much richer in color, while the black feathers are more abundant, with stronger and more regularly marked yellow and green tips. It is almost impossible to notice the change of color on comparing individual feathers, but taken collectively there is a decided change from the paler almost whitish yellow of the younger birds to an intensity of color nearly approaching orange in the last collected specimens. That the change is slow is shown by the presence of pin feathers even in the last specimens collected on the 26th of August, so that the later dated specimens all show a greater abundance of richer, deeper colored feathers all over the body as contrasted with the June and early July young birds. The moulting of the first flight feathers and the growth of new ones as indicated by the "spike-tails," mentioned by Messrs. Rathbun and Wright, as quoted above, has not taken place in any of my specimens.[1] If they really moult then the change must take place after the moult on the body is fully completed. No appreciable difference is found on comparing a number of these late young males, but in the females of corresponding ages there would seem to be some slight difference in the size and exact location of the black spots on the head. On the last female described above, the spots are decided, while on others they are much less so, hardly two being alike. On one they consist of a mere dusky darkening near the tips of a few feathers, while on two specimens I have been unable to find any, though, as the region of the spots is the last to complete the new plumage and pin feathers are still visible, it is possible that they have not yet appeared.

It would thus seem, in the light of my experience and specimens, that the changes in this species from the nestling to the adult plumage takes place in these counties of Tidewater Virginia, approximately between the 20th of June and the 6th of July, and that a further and more gradual change, requiring about six weeks, brings them to the same general plumage as

[1] I am now strongly inclined to the opinion that their birds were not young at all, but adults acquiring the fall plumage.

the adult, except for the colored tips to the black feathers. I am inclined to think, however, that eight, or at the most ten, days are sufficient for the change, instead of three years, as implied or stated in the quotations given above.

Immaturity in this species is therefore recognizable, especially by the presence of differently colored tips to the head feathers, which are more or less persistent until the birds moult again in July of the following year; there being, I have good reason to believe, but one moult a year in this species.

NOTES AND SONG-FLIGHT OF THE WOODCOCK (*PHILOHELA MINOR*).

BY WILLIAM BREWSTER.

IN 1891, Mr. Walter Faxon and I spent two evenings and one morning studying the notes and song-flight of the Woodcock, and the present article consists merely of a transcript of the memoranda made on these occasions,—viz., the evenings of April 7 and 13, and the morning of April 8, the locality being Lexington, Massachusetts.

Lexington, Mass., April 7, 1891.—Mr. Faxon found a Woodcock singing on the evenings of the 5th and 6th and the morning of the 7th on the top of a high hill near the village. I went there with him this evening, arriving at 6.25, when the bird was already peeping. There were seven song-flights and eight peeping spells in the next thirty-five minutes, the last peeping being unusually protracted and the bird, at its close, rising and flying off low down without singing, at precisely seven o'clock. At this time it was still rather light or, at least, not nearly so dark as the night afterwards became. The weather was cold with a strong northwest wind, the sky overcast. The *paaps* were uttered consecutively 31, 21, 37, 29, and 28 times, no counts being made during the first and last calling periods. The song proper (timed once only) lasted exactly ten seconds.

The song-flight (timed once) from start to finish, the bird being actually seen to leave the ground and to alight on his return, lasted just one minute. We watched the bird through several flights. He always sprang directly into the wind and flew nearly straight for about 100 yards, rising at a very slight angle with the ground. He then turned, sometimes to the right, sometimes to the left, and flew about 200 yards with the wind, curving slightly and mounting rapidly on this stretch especially near its end. The next stretch, a half spiral, carried him to the highest elevation, about 300 feet. He then described a rather large circle on a level plane and after this flew about irregularly in smaller, incomplete circles and broad spiral curves all of which inclined downward. Once he described a double curve nearly like the letter S. Although he was a strong and musical singer he did not pitch down on zigzag lines while singing like all the other birds that I have seen, but merely followed the gently sloping lines just described, his descent, during the song, being scarcely more steep than during the twittering which immediately preceded the song. He looked very bat-like, darting irresolutely about in the dusky sky. The song proper was interspersed with more or less twittering. At its close the bird shot down in the usual manner on set wings, flapping his wings a number of times to check his speed just before he reached the ground. Sometimes he would alight immediately after this flapping, sometimes skim close over the earth for several rods before finally settling.

By making a quick run while the bird was in the air I succeeded in reaching and crouching behind a small cedar on the edge of the opening where he usually alighted. He settled on the further edge of this within about fifty feet of me, and for a moment or two stood perfectly still. Then he uttered about twenty *paaps* without changing his position or taking a single step. Each *paap* was closely preceded by a *p't-ul*, so closely at times that the two sounds were nearly merged, suggesting that one of them might be mechanical! Sometimes two *p't-uls* preceded the *paap*.

The delivery of each *paap* was accompanied by an abrupt backward, followed by a forward and downward, jerk of the head and a slight opening of the wings. The bird did not turn about

as Mr. Faxon had seen him do on a former occasion, but after peeping about twenty times he made a crouching run of a few feet in a half circle. When he stopped he was lost to my sight behind a small bush. While under my observation I could not see him very distinctly, owing to the fact that the light was dim and on his further side, he being to the west of my position. After peeping a few times more he rose, flying off up wind, mounting at first very gently, in fact skimming close to the ground for the first twenty yards, but probably rising slightly during even this distance. During the remainder of the ascent he rose more and more steeply the further he proceeded. Mr. Faxon tells me that on the two preceding evenings, as on this, he closed by a long spell of peeping, and then flew off to cover or feeding ground.

Lexington, Mass., April 8, 1891.—Reached the hill-top at 4.25 this morning; sky overcast, wind northwest, moderate; cold, the ditches and shallow pools covered with ice as thick as window glass. The eastern sky was reddening but there seemed to be less daylight than when our bird ceased singing last night. Nevertheless he was already at his post, for we heard him rise and sing before we had climbed halfway up the hillside. During the next twenty-five minutes he sang nine times and at the close of the ninth song scaled directly over his peeping place down the hillside into a piece of birch cover where he doubtless spends the day. Mr. Faxon tells me that he ended in the same way yesterday morning, that is, by flying to cover without peeping. It was practically broad daylight during his last ascent and I saw this performance, as well as the two that preceded it, nearly or quite as distinctly as if it had been noonday. The bird rose and descended precisely as he did last evening, but once during the descent he made two rather steep pitches (while singing). His ascent was fairly regular but his descent decidedly irregular. He sang last evening and this morning over nearly the same spot. His total flight extended over a space of fully five acres. During his last descent this morning I followed him with my glass and made out *distinctly* that while singing he alternately flapped his wings (several times in succession) and held them extended and motionless. During one of the periods when they were not moving the song was at its height and the

bird was gliding down on a *very* gentle slope. Perhaps *floating* would be a more correct term than gliding, for the motion was comparatively slow. Towards the end of the song the descent was steeper and the bird slid down the sky like a meteor. The flight of this individual is evidently very erratic and subject to excessive variations. I ran to the peeping spot during the third ascent but the bird alighted where I could not see him, owing partly to the darkness, partly to intervening obstructions of brush or grass. The next two times he was equally unaccommodating although he chose different spots, both within thirty yards of me, on each return. I then made another run and crouched in the middle of a ground juniper. Fatal mistake! I could not move without making a loud rustle or crunching of dry twigs. It was too late to change again, however, for the next instant the bird shot close over my head and alighted directly behind me *not ten feet off*. I could hear his wings rustle as he closed them. An interval of silence, a *p't-ul*, and then the harsh *paap* smote on my ear with fairly painful effect. At this close range it had a strange, vibrating quality. It seemed to penetrate my brain as if some one had blown a blast on a fish horn within a foot of my head. Another and another *paap*, each preceded by the usual *p't-ul*. I now attempted to move, but a slight sound which I made caused the bird to cease peeping at once. Silence for several seconds; then the *p't-ul* repeated six or eight times doubtfully; then the peeping resumed. I did not move again and the bird finishing its peeping rose and sang, descending fifty yards away behind some bushes. The next song-flight was the last.

The *p't-ul* is, I believe (and Mr. Faxon confirms this), usually repeated many times in succession, *without* the alternating *paaps*, when the bird is slightly alarmed or suspicious. My old comparison of the *p't-ul* to the sound and its echo made by a drop of water falling into a cistern struck me again this evening. This note also somewhat resembles the remonstrance made by a brooding hen, when disturbed. It can be heard about eighty-five yards away under the most favorable conditions but ordinarily not beyond thirty or forty yards. The hill where this bird sings is one of the highest (340 feet) near Lexington (220 feet). Its summit is broken by alternating knolls and hollows

and is open pasture land with a few scattered red cedars and ground junipers and occasional patches of hazel bushes. The peeping ground is in a hollow on the edge of a hazel thicket. The bird usually alights in an opening where close-cropped turf (now of a bleached straw color) alternates with patches of gray reindeer moss or dark green pasture moss.

The entire space embraced in the peeping ground would not exceed half an acre. Mr. Faxon saw the bird alight several times, on the night of the 5th, in the same place, but last evening and this morning he chose a different spot each time. The entire peeping ground, as well as the whole top of the hill, is perfectly hard and dry. Three sides of the hill are covered with second growth oak and birch woods, which appear to be also dry beneath. At the base of the hill on two sides, however, the land is wet and swampy.

We searched the 'peeping ground' carefully for Woodcock droppings but could find no trace of them. On April 11, Mr. Faxon searched it again without discovering a single 'chalking.'

Lexington, Mass., April, 13, 1891.—To the hill with Mr. Faxon at 6.30 P. M. Evening clear and warm (thermometor 60° at sunset, 62° at noon) with light west wind changing to southwest just after sunset. The Woodcock began peeping at 6.44. ('Last night he began at 6.30 and night before last at 6.40, both of these evenings being cloudy.'—*Faxon.*) He continued peeping nine minutes before making his first ascent, and made in all six ascents. ('Fifteen ascents were noted one evening last week.'—*Faxon.*) Two flights, which I timed from the start to the finish, lasted respectively 57 and 59 seconds, the song 11 and 12 seconds respectively. During the first ascent I ran to the peeping-place and sat down on the ground behind a large rock. The bird alighted on a little knoll covered with reindeer moss just nine paces from me. There was absolutely nothing between us, the rock being in front of me and the Woodcock on my right. For a moment he stood motionless and silent, then began peeping. I turned so as to face him, at the same time raising my glass. He evidently saw me, for he stopped peeping and uttered the *p't-ul* a number of times in succession, but soon after I had settled myself in the new position, he began peeping again and showed no further signs of alarm or suspicion. For

some time he stood facing the south, his right side turned squarely towards me, giving me a profile view. The light was still good and thrown directly upon him (he was to the east of my position). Through the glass I could distinctly see his color and markings, the large dark eye, the bill, feet—in short, every detail of form and plumage. In the intervals between the notes, his position, outline and the relative proportions of the different parts presented nothing peculiar. The body was held a little more erect than usual, the back rounded, the head raised, the bill inclined well downward, the tail depressed and closed, its tip just showing below the ends of the closed wings. There was no inflation of the throat, jugulum or breast, no ruffling of the plumage. In short, the bird looked in every way precisely like the conventional stuffed Woodcock that one sees in taxidermists' shops.

At each utterance of the *paap* the neck was slightly lengthened, the head was thrown upward and backward (much in the manner of a Least Flycatcher's while singing), the bill was opened wide and raised to a horizontal position, the wings were jerked out from the body. All these movements were abrupt and convulsive, indicating considerable muscular effort on the part of the bird. There was perhaps also a slight twitching of the tail, but this member was not preceptibly raised or expanded. The return of the several parts to their respective normal positions was quite as sudden as were the initial movements. The forward 'recovery' of the head was well marked. The opening and shutting of the bill strongly suggested that of a pair of tongs. During the emission of the *paap* the throat swelled and its plumage was ruffled but neither effect was more marked than with any of our small birds while in the act of singing.

The *p't-ul* note when closely followed by the *paap*, as was usually the case, was not accompanied by any of the movements just described but when, as occasionally happened, the bird repeated it several times without peeping, he moved his head and bill just as when peeping, but to a much less degree.

After a minute or two the Woodcock suddenly turned and, without changing his ground, took a position directly facing me. Viewed from in front the motions just described produced a somewhat different impression. The backward toss of the head

was no longer apparent, while the lengthening and shortening of the neck became more conspicuous. In fact the head now seemed to be bobbed up and down, much in the manner of an Owl's. The movement of the wings was more strongly marked, and its character and extent could be definitely traced. The wings were not spread or opened, but merely jerked out from the body spasmodically. The shoulders showed distinctly for an instant, but the primaries were at all times covered by the long overlapping feathers of the flanks and sides. These loose feathers moved out and in with the wings, giving the body the appearance of being laterally inflated and then contracted. The mouth opened to such an extent that I could look directly down the bird's throat, which appeared large enough to admit the end of one's forefinger. The lateral distention of the mouth was especially striking.

Wilson Flagg says (Birds and Seasons in New England, p. 333) that the Woodcock while peeping "may be seen strutting about like a Turkey-cock, with fantastic jerkings of the tail and a frequent turning of the head." Neither Mr. Faxon nor I have ever seen anything of the kind. On the contrary, one of the most marked features of the performance is the fact that the bird, when not in the act of uttering the sound, stands perfectly still, and always in about the same attitude. Our subject to-night did not once vary his attitude nor turn his head ever so slightly to one or the other side. It was not uncommon, however, for him to change his position after peeping a few times by turning partly around and facing in a different direction; and Mr. Faxon has repeatedly seen him move from place to place, over a space of a few square yards by quick, short runs, stopping to peep a number of times in succession on the top of each little mound that lay in his track and facing in different directions. Once to-night he faced all four quarters of the compass in succession, making a quarter turn each time without changing his ground. Each change of position produced a marked change in the sound of his voice. When his back was turned towards me, the *paap* sounded muffled and much more distant, while I could hardly hear the *p't-ul* at all. Mr. Faxon has seen him descend from the air to exactly the same spot three or four times in succession, but to-night he alighted in a different place after each flight,

possibly because he had seen me the first time. I had only one good view of him on the ground.

Mr. Faxon devoted his entire attention this evening to studying the aerial flight. His conclusions are that during the production of each set of musical (water-whistle) notes, the bird holds his wings extended and *set*, whether he be sailing or pitching down sharply at the time; and further that the wings invariably move rapidly and continuously in a whirring manner during the intermittent periods of twittering.

This morning Mr. Faxon found the bird already peeping at 4.15. He watched him through one peeping spell at a distance of fifteen feet (measured) from behind a small leafless bush.

BIRDS OF SOUTH-CENTRAL MONTANA.

BY CHAS. W. RICHMOND AND F. H. KNOWLTON.

THE observations recorded in this paper were confined almost entirely to Gallatin County, with short visits into the western part of Park County north of the Yellowstone National Park, and into the eastern portions of Madison and Jefferson Counties. The area embraced is about 75 miles in north and south direction, and 30 miles in east and west, or approximately 2500 square miles. It lies along the eastern flank of the Rocky Mountains, in the south-central portion of this great State. It is very much diversified, including the broad, fertile Gallatin Valley on the north with an altitude of only 4600 feet, the long, narrow Madison Valley on the west, the elevation of which is about 5000 feet, and the Gallatin and Madison ranges of mountains in the southern portion, with a general elevation of from 6000 to 9000 feet, with many peaks rising above 10,000 feet, and a few to over 11,000 feet. In the extreme northern portion of the area under discussion the three rivers—Gallatin, Madison and Jefferson—unite to form the headwaters of the Missouri. These streams all rise in the mountains far to the south and southwest, and hence flow approximately north. In their courses through the mountains they have in many places

cut for themselves deep cañons, producing scenery of the wildest and grandest kind.

Bozeman (altitude 4754 feet), a town pleasantly situated on the eastern side of the Gallatin Valley, and on the East Gallatin River, was made the headquarters. Some collecting was done in this vicinity, especially near Fort Ellis, and, farther south, in and about Rocky Cañon and Bridger Cañon. During the latter part of July an excursion was made to Mystic Lake, a small body of crystal water at an elevation of about 7800 feet, in the Gallatin Range 20 miles southeast of Bozeman. Thence it was continued over the divide into the Yellowstone Valley as far as Coalpit Creek and returning by way of Traill Creek (altitude 7000 feet) and Bear Creek. A number of species were found breeding at that time, as well as young birds observed.

Another excursion, extending from August 1 to October 3, was made up the Gallatin, with stops at Bear Creek (5800 feet), Spanish Creek (5400 feet), Squaw Creek (5600 feet), Gallatin Cañon (the stream is about 6000 feet with abrupt walls and receding ridges rising to 7000 and 8000 feet), West Fork of the Gallatin (6500–9000 feet), Lower Basin (6000–8000 feet), Middle Basin (7000–9000 feet), Taylor's Fork, also called Dodge Creek (7000–9500 feet), and Big Horn Peak (10,000 feet).

Still another excursion, extending from August 5 to September 27, started from Bozeman, with stops at Reese Creek (5400 feet) in the northern portion of the Gallatin Valley, East Gallatin River near Hillsdale (4600 feet), Pass Creek near Flathead Pass in the Bridger Range (about 5000 feet), head of Dry Creek at north end of Bridger Range (5500 feet), Gallatin Station (4000 feet), Jefferson River near Three Forks (4000 feet), Madison River near Willow Creek (4600 feet), camp in the valley between the Madison and Gallatin Rivers (4600–5500 feet), Fort Ellis, and Mystic Lake. The first two trips, occupying the time from July to October 3, were made by Mr. Knowlton in 1890; the third, from August 5 to about the first of October, was made jointly in 1888.

From this hasty itinerary it appears that the area studied extended in elevation from a little over 4000 feet to over 10,000

feet. In the northern and western portions where the elevation was lowest, the land is largely under cultivation. On rising into the foothills thickets of quaking aspen (*Populus tremuloides*) are abundant, extending also into the open valleys as high as 8000 feet. In the southern and eastern more mountainous portion the prevailing forest tree is the black pine (*Pinus murrayana*), which reaches its greatest development on the dryer plateaus between 7000 and 8000 feet, although it is found from the lower altitudes (5500 feet) up to 9500 feet. The Douglas or red fir (*Pseudotsuga douglassii*) is found up to 9000 feet, generally scattered over the dryer grassy ridges and slopes where it forms loose groves. *Pinus flexilis* is also common on dry gravelly ridges from 6000 feet to about 8000 feet. Next to the black pine the balsam (*Abies subalpina*) is most abundant and widest in distribution, being found throughout in cool, moist situations, at low elevations on the northern slopes, and especially common on wet subalpine slopes above 8000 feet. Little less abundant and occupying approximately the same situations is the spruce (*Picea engelmanni*).

The observations recorded are far from exhaustive, for they were made in the midst of other engrossing duties which demanded first attention. They record simply what we were able to note in the time at our disposal. We had hoped that our observations might be supplemented by additional and more detailed work, but as there appears no prospect of this, we present the notes in the hope that they may be of assistance to future students of the bird life of this region.

Of the list of 111 species, specimens were obtained of 93 of them, represented by nearly 700 specimens.

In addition to these we saw several large Owls (*Bubo?*), not satisfactorily identified; some Hawks, and smaller birds, names not determined, and which are therefore not given a place in the list.

The following species mentioned by Mr. Geo. Bird Grinnell[1] were not met with by us:—

[1] War Department—Report of a Reconnaissance from Carroll, Montana Territory, on the Upper Missouri, to the Yellowstone National Park, and return, made in the Summer of 1875. By Wm. Ludlow. Washington, Government Printing Office, 1876. Zoölogy by Geo. Bird Grinnell. Birds, pp. 72–92.

Tachycineta thalassina. VIOLET-GREEN SWALLOW.—"Very numerous about Fort Ellis."

Spizella monticola ochracea. TREE SPARROW.—"Three or four seen in Bridger Mountains early in September."

Totanus flavipes. YELLOW-LEGS.—"A few seen near Fort Ellis."

Tringa minutilla. LEAST SANDPIPER.—"Only observed near Fort Ellis, where it was abundant early in September."

Tringa bairdii. BAIRD'S SANDPIPER.—"Flocks of 50 or 60 noticed at Fort Ellis and Gardiner's Springs."

Gallinago delicata. WILSON'S SNIPE.—"One seen near Fort Ellis."

From Dr. Merriam's report[1] we quote:—

Gallinago delicata.—"Shot at Fort Ellis July 9, 1872."

Surnia ulula caparoch.—"Shot on Madison River, Montana, August 11, 1872."

This last was, however, taken beyond the limits of the present paper.

Attention should also be called to the notes on Montana birds by Mr. Robert S. Williams in former numbers of 'The Auk',[2] and to those of Capt. P. M. Thorne.[3] These papers refer to localities somewhat beyond the limits set in the present paper, but may be consulted with profit by the student of the birds of this region.

In conclusion we desire to acknowledge the greatest assistance from Dr. A. C. Peale, then of the U. S. Geological Survey, by whose kindness the observations here presented were made possible.

1. **Larus californicus.** WESTERN GULL.—One was seen on the Jefferson River, about September 15.

2. **Merganser serrator.** RED-BREASTED MERGANSER.—Noted several times during August and September in flocks of from four to twenty.

3. **Anas boschas.** MALLARD.—Very common.

4. **Anas carolinensis.** GREEN-WINGED TEAL.—Frequently seen in small numbers on the tributaries of the rivers.

---

[1] Sixth Annual Report of the United States Geological Survey of the Territories, for 1872. Washington, Government Printing Office, 1873. Reports on Mammals and Birds by C. Hart Merriam. Birds, pp. 670–715.

[2] The Auk, III, 1886, p. 274; V, 1888, pp. 14–18; VII, 1890, pp. 292, 293, etc.

[3] Ibid., VI, 1889, p. 336.

5. **Branta canadensis.** CANADA GOOSE.—One small flock of six seen on the Madison River late in September. During our stay in the vicinity, this flock was noticed each morning as it passed by to some feeding grounds up the river, and again on its return at night.

6. **Botaurus lentiginosus.** AMERICAN BITTERN.—Several seen.

7. **Ardea herodias.** GREAT BLUE HERON.—Rather common.

8. **Porzana carolina?** SORA.—A small Rail was seen in a marshy tract on the East Gallatin, about the middle of August, that we refer with little doubt to this species.

9. **Phalaropus lobatus.** NORTHERN PHALAROPE.—Four specimens were shot at a mountain pool, in September.

10. **Totanus melanoleucus.** GREATER YELLOW-LEGS.—Rather common in September. Several specimens obtained in this region appear to be somewhat paler than eastern examples, accompanied by slight differences in size.

11. **Totanus solitarius cinnamomeus.** WESTERN SOLITARY SANDPIPER.—Found in September along the smaller streams, usually in pairs.

12. **Symphemia semipalmata inornata.** WESTERN WILLET.—One pair observed, near Moreland, August 19, along a shallow, pebbly stream.

13. **Actitis macularia.** SPOTTED SANDPIPER.—Quite common.

14. **Numenius longirostris.** LONG-BILLED CURLEW.—One individual seen late in August, on the foothills north of the Gallatin Valley.

15. **Ægialitis vocifera.** KILLDEER.—Very common. We frequently came upon them crouching close to the ground, as if to escape detection, and on such occasions were almost in the midst of a flock of twenty or so before aware of their presence.

16. **Dendragapus obscurus.** DUSKY GROUSE.—Very common in the mountains and in well-wooded ravines in the foothills. A single specimen preserved is not quite typical.

17. **Bonasa umbellus,** SUBSP.—A Ruffed Grouse was shot on Taylor's Fork, but not preserved.

18. **Pediocætes phasianellus campestris?** PRAIRIE SHARP-TAILED GROUSE.—Very common in the valleys. A head and wing saved for identification are doubtfully referred to this subspecies.

19. **Centrocercus urophasianus.** SAGE GROUSE.—Abundant throughout the valleys, in the patches of sage brush (*Artemisia*).

20. **Zenaidura macroura.** MOURNING DOVE.—Very common. An unfledged young bird was found on a hillside August 31.

21. **Cathartes aura.** TURKEY VULTURE.—Common.

22. **Circus hudsonius.** MARSH HAWK.—Common.

23. **Accipiter atricapillus.** AMERICAN GOSHAWK.—Three seen, one of which was shot but not preserved.

24. **Accipiter velox.** SHARP-SHINNED HAWK.—One specimen secured.

25. **Buteo borealis calurus.** WESTERN RED-TAIL.—Quite common.

26. **Buteo swainsoni.** SWAINSON'S HAWK.—About as numerous as the preceding.

27. **Aquila chrysaëtos.** GOLDEN EAGLE.—Quite common. Parties of three or four, apparently old birds with their offspring, were often seen circling about high overhead.

28. **Falco richardsonii.** RICHARDSON'S MERLIN.—One shot September 23, on the Madison River, was the only one identified. Its stomach contained the remains of a Lincoln's Sparrow.

29. **Falco sparverius.** SPARROW HAWK.—Abundant. Its food here is mainly grasshoppers.

30. **Pandion haliaëtus carolinensis.** AMERICAN OSPREY.—Rather common.

31. **Asio wilsonianus.** AMERICAN LONG-EARED OWL.—Frequently noted along the Jefferson River in heavy thickets. A specimen shot here was found to have a long, slender, thread-like worm under its tongue, similar to those found infesting the fish of the Jefferson River. The presence of one of these parasites in the Owl would indicate an occasional fish diet for that bird.

32. **Ceryle alcyon.** BELTED KINGFISHER.—Very common along all the streams. Several were noted at Mystic Lake. At our camp on the Jefferson River we found the fish infested with long, slender white worms, which were coiled up in the flesh on the sides of the back. A Kingfisher shot at this camp was also found to be infested with these worms, seven of which (some of them nearly a foot in length) were found among (not *in*) its intestines.

33. **Dryobates villosus hyloscopus.** CABANIS'S WOODPECKER.—One specimen secured.

34. **Dryobates pubescens orecœcus.** MOUNTAIN DOWNY WOODPECKER.—Two specimens taken.

35. **Picoides arcticus.** ARCTIC THREE-TOED WOODPECKER.—Rare; one taken in the Gallatin Basin, August 29.

36. **Picoides americanus dorsalis.** ALPINE THREE-TOED WOODPECKER.—Two specimens secured on the Gallatin River, August 24, altitude about 7200 feet.

37. **Sphyrapicus varius nuchalis.** RED-NAPED SAPSUCKER.—Several collected from July to September. Breeds.

38. **Sphyrapicus thyroideus.** WILLIAMSON'S SAPSUCKER.—Rather uncommon at Traill Creek and Gallatin Basin, where three immature birds, evidently raised in the vicinity, were secured August 28–September 3.

39. **Melanerpes torquatus.** LEWIS'S WOODPECKER.—Common in the mountains and foothills, in tracts of dead timber.

40. **Colaptes cafer.** RED-SHAFTED FLICKER.—Common. Regardless of its color it is known to some of the residents as "Yellowhammer."

41. **Chordeiles virginianus henryi.** WESTERN NIGHTHAWK.—Very common. These birds were often seen on foraging expeditions during midday, in flocks of twenty or more. Most abundant in the valleys.

42. **Stellula calliope.** CALLIOPE HUMMINGBIRD.—Two individuals were noted, one of which, an immature bird, was obtained August 12, at Bear Creek.

43. **Tyrannus tyrannus.** KINGBIRD.—Common.

44. **Sayornis saya.** SAY'S PHŒBE.—Two specimens secured, and these were the only ones seen.

45. **Contopus borealis.** OLIVE-SIDED FLYCATCHER.—One shot on Traill Creek, July 28.

46. **Contopus richardsonii.** WESTERN WOOD PEWEE.—Taken on Spanish Creek about the middle of August.

47. **Empidonax minimus.** LEAST FLYCATCHER.—One specimen secured on Bear Creek, August 13; this is an adult female, and is clearly referable to the above species.

48. **Empidonax hammondi.** HAMMOND'S FLYCATCHER.—Three immature birds were secured on Squaw Creek, August 19–20.

49. **Empidonax wrightii.** WRIGHT'S FLYCATCHER.—Quite common; found usually in wooded ravines in the foothills. Fully fledged young birds were found throughout the month of August.

50. **Otocoris alpestris arenicola.** DESERT HORNED LARK.—Very abundant everywhere in the valleys and on the foothills. Many young in the nestling plumage were found during August. The old birds at this time were in worn and faded plumage, and moulting. About September 20 large numbers of Horned Larks began to arrive from the north, and we noted hundreds of them daily. Over sixty specimens were preserved, and all of them are referable to the subspecies *arenicola*, although a few, obtained from the ranks of the migratory flocks arriving late in September, approach *O. a. merrilli* in the possession of a yellowish edging to the black crescent on the breast. The subspecies *leucolæma* had apparently not arrived by the first of October, at which time our observations ceased, but we have received numbers of this form from the vicinity of Bozeman in midwinter.

51. **Pica pica hudsonica.** AMERICAN MAGPIE.—Very abundant, but shy. Most numerous in the valleys, but noted also in the mountains. Several seen at Mystic Lake.

52. **Cyanocitta stelleri annectens.** BLACK-HEADED JAY.—Only occasionally seen in the mountains. Three were seen near the upper end of Gallatin Basin, at an altitude of about 9000 feet. Adults and young secured.

53. **Perisoreus canadensis capitalis.** ROCKY MOUNTAIN JAY.—Very common in the mountains from the lowest limit of the coniferous forests up to at least 9000 feet, above which altitude we did not have occasion to go. These birds were known locally by a variety of names, such as Meatbird, Meathawk, Campbird, Camprobber, and by others who had known the bird in Colorado, they were called Baldhead, Tallowhead and Whitehead. Immature birds with traces of the dark first plumage were found at Mystic Lake July 27.

54. **Corvus americanus.** AMERICAN CROW.—Abundant and very tame. There was a Crow roost in the mountains, about five miles south of Fort Ellis, and fully five hundred Crows passed over our camp morning and evening to and from this roost. During the day they were scattered over the Gallatin Valley. They appeared to be rather less noisy than eastern Crows and so unusually tame that one could approach them at any time within easy gun range, without resort to strategy.

55. **Nucifraga columbiana.** CLARKE'S NUTCRACKER.—Common in the mountains, and occasionally found on some of the higher foothills, where we saw them at an elevation of about 6000 feet. At Mystic Lake we saw one of these birds soaring in circles, like a hawk, with its white tail fully spread. One shot on Traill Creek was found to have eighty-two piñon seeds in its gullet.

56. **Dolichonyx oryzivorus.** BOBOLINK.—Very common at one place in the northern part of Gallatin Valley, where, about the middle of August, we found a large number in a rank growth of wild sunflowers (*Helianthus*). This was in close proximity to, and in fact to some extent adjoining, a considerable tract of nearly ripe oats. Although the birds were swarming in the former, we found only a few stray birds in the latter field.

57. **Molothrus ater.** COWBIRD.—An immature individual shot about the middle of August was the only one observed.

58. **Sturnella magna neglecta.** WESTERN MEADOWLARK.—Abundant.

59. **Icterus bullocki.** BULLOCK'S ORIOLE.—No birds of this species were seen, but a nest no doubt belonging to this Oriole was found in some willows on the East Gallatin.

60. **Scolecophagus cyanocephalus.** BREWER'S BLACKBIRD.—Very abundant, especially in the fall, when these birds were seen in flocks of thousands. During August we met with them usually in small numbers about the ranches and cowpens, and occasionally scattered along the roadside, resting in the shadows of the fenceposts from the heat of midday.

61. **Pinicola enucleator.** PINE GROSBEAK.—Occasionally observed. One was shot at Mystic Lake in the latter part of September, and another in July on Traill Creek, where it breeds.

62. **Loxia curvirostra minor.** AMERICAN RED CROSSBILL.—About a dozen seen in Gallatin Basin in September.

63. **Spinus tristis.** AMERICAN GOLDFINCH.—Common.

64. **Spinus pinus.** PINE SISKIN.—Rather common on the foothills, where it breeds. A fully fledged young bird was shot late in August.

65. **Poocætes gramineus confinis.** WESTERN VESPER SPARROW.—Very common, especially in the fall.

66. **Ammodramus sandwichensis alaudinus.** WESTERN SAVANNA SPARROW.—Abundant. First noted about the last of August.

67. **Ammodramus savannarum perpallidus.** WESTERN GRASSHOPPER SPARROW.—One bird, presumably this form, was seen in the Gallatin Valley.

68. **Chondestes grammacus strigatus.** WESTERN LARK SPARROW.—A few seen during August, when two immature birds were obtained.

69. **Zonotrichia leucophrys intermedia.** INTERMEDIATE SPARROW.—Very common in the valleys after the first of September. Breeds in the mountains, where it was noted on Traill Creek in July.

70. **Spizella socialis arizonæ.** WESTERN CHIPPING SPARROW.—Common.

71. **Spizella breweri.** BREWER'S SPARROW.—Commonly found in rocky ravines among the foothills, in stubby pines and brush.

72. **Junco hyemalis shufeldti.** SHUFELDT'S JUNCO.—Three specimens of this form were taken at Taylor's Fort (alt. 7500 feet), September 7 and 8.

73. **Junco annectens.** PINK-SIDED JUNCO.—Commonly found in the valleys after the first of September. It was more abundant in the mountains, where it breeds. Young birds were taken at Mystic Lake late in July.

74. **Melospiza fasciata montana.** MOUNTAIN SONG SPARROW.—Very common.

75. **Melospiza lincolni.** LINCOLN'S SPARROW.—Rather common. Noted in the valleys, where several specimens were secured in the early part of September. A *Falco richardsonii* shot September 23 had the remains of one in its stomach. It breeds in the mountains, where, at Traill Creek, a young bird was secured July 29.

76. **Pipilo maculatus arcticus.** ARCTIC TOWHEE.—Quite common in ravines leading into the foothills. Young birds noted in August.

77. **Pipilo chlorurus.** GREEN-TAILED TOWHEE.—Uncommon, in situations similar to that of the preceding.

78. **Habia melanocephala.** BLACK-HEADED GROSBEAK.—Several noted, including young birds hatched in the vicinity.

79. **Passerina amœna.** LAZULI BUNTING.—Quite common in the valleys and foothills; breeds.

80. **Piranga ludoviciana.** LOUISIANA TANAGER.—A few seen in September at the lower elevations. Noted common and breeding at Mystic Lake late in July.

81. **Petrochelidon lunifrons.** CLIFF SWALLOW.—Quite common.

82. **Chelidon erythrogastra.** BARN SWALLOW.—Abundant. We found them gathered in long strings on the telegraph wires early in September.

83. **Tachycineta bicolor.** TREE SWALLOW.—Common. A colony noted about the middle of August in a clump of cottonwoods, where the old birds were still feeding young.

84. **Clivicola riparia.** BANK SWALLOW.—Common; young birds barely able to fly were observed after the middle of August, and some of the nests were apparently still occupied. It may be interesting to note in this connection that in the neighborhood of Washington, D. C., at this date, the resident Bank Swallows have long since finished nesting and

left the vicinity of their breeding grounds to gather in larger squads on the marshes of the Potomac, and many of them have, even by the middle of July, begun to migrate down the river. Migratory birds are, however, noted in the vicinity of Washington through most of September.

85. **Ampelis cedrorum**. CEDAR WAXWING.—Common.

86. **Lanius ludovicianus excubitorides**. WHITE-RUMPED SHRIKE.—Common in the valleys. A single Shrike was also noted in the mountains in September. It was very likely *L. borealis*.

87. **Vireo gilvus**. WARBLING VIREO.—Common in the willows and cottonwoods along streams in the valleys.

88. **Helminthophila celata**. ORANGE-CROWNED WARBLER.—Two specimens were secured at low elevations September 2 and 15.

89. **Dendroica æstiva**. YELLOW WARBLER.—Common.

90. **Dendroica auduboni**. AUDUBON'S WARBLER.—Very common during September both in the mountains and in the valleys. Breeds in the mountains; numbers were observed at Mystic Lake late in July.

91. **Geothlypis macgillivrayi**. MACGILLIVRAY'S WARBLER.—Common; breeds.

92. **Geothlypis trichas occidentalis**. WESTERN YELLOW-THROAT.—Very common.

93. **Sylvania pusilla pileolata**. PILEOLATED WARBLER.—Very common from the middle of August until late in September, in the valleys.

94. **Setophaga ruticilla**. AMERICAN REDSTART.—Common in the valleys.

95. **Anthus pensilvanicus**. AMERICAN PIPIT.—Very common in the fall. This species made its appearance toward the end of September, mingling freely with the Horned Larks, which were arriving in large numbers at that time.

96. **Cinclus mexicanus**. AMERICAN DIPPER.—Generally distributed in the mountain region.

97. **Oroscoptes montanus**. SAGE THRASHER.—One immature bird secured, and another seen at low elevations.

98. **Galeoscoptes carolinensis**. CATBIRD.—Common in the valleys.

99. **Salpinctes obsoletus**. ROCK WREN.—Quite abundant. Young birds were plentiful during August.

100. **Troglodytes aëdon aztecus**. WESTERN HOUSE WREN.—Common. A nest found in a dead stump in a cottonwood thicket August 13, contained four half-fledged young.

101. **Certhia familiaris montana**. ROCKY MOUNTAIN CREEPER.—A specimen shot September 23, in Jefferson Valley, was the only one seen.

102. **Sitta carolinensis aculeata**. SLENDER-BILLED NUTHATCH.—Uncommon; but found breeding at several places in the mountains.

103. **Sitta canadensis**. RED-BREASTED NUTHATCH.—Two specimens obtained at low elevations in September. These specimens, and others from the Mississippi Valley westward, are somewhat brighter on the under-

parts than average eastern birds. There appears to be no difference in size.

104. **Parus atricapillus septentrionalis.** LONG-TAILED CHICKADEE.—Very abundant along the streams in the valleys, travelling about in small troops in the cottonwoods and willows.

105. **Parus gambeli.** MOUNTAIN CHICKADEE.—Common in the mountains, and extending down on the foothills as far as coniferous trees occur. The hoarse, drawling note of this bird is easily distinguished from the energetic one of the preceding species. After the middle of September we found them sparingly in the valleys, associating with flocks of the Long-tailed species.

106. **Regulus satrapa olivacea.** WESTERN GOLDEN-CROWNED KINGLET.—Breeds in the mountains. An immature bird just leaving the nestling plumage was secured August 28. The species was quite common in the vicinity of Mystic Lake about the last of September, but no individuals were seen at any time in the valleys.

107. **Regulus calendula.** RUBY-CROWNED KINGLET.—Common during September in the valleys. It was not noted in the mountains.

108. **Turdus ustulatus swainsonii.** OLIVE-BACKED THRUSH.—Several specimens collected are referable to this form. Young birds in first plumage were secured July 27, at Mystic Lake, and August 27, at the north end of Gallatin Valley.

109. **Turdus aonalaschkæ auduboni.** AUDUBON'S HERMIT THRUSH.—Several obtained. A young bird in nestling plumage was secured July 27, at Mystic Lake. An adult was taken September 11, at an elevation of 8500 feet.

110. **Merula migratoria propinqua.** WESTERN ROBIN.—Common in the valleys, and also noted in some numbers in the mountains.

111. **Sialia arctica.** MOUNTAIN BLUEBIRD.—Common; breeds. Found migrating in small flocks during September.

Too late for insertion in its proper place in the list, we find that an immature specimen of the Rough-winged Swallow (*Stelgidopteryx serripennis*) was collected by us near Hillsdale, in Gallatin Valley, August 22, 1888. The bird was doubtless raised in the vicinity. This appears to be somewhat north of its usual range.

JOHN JAMES AUDUBON.
[1850.]

THE LAST PORTRAIT OF AUDUBON, TOGETHER WITH A LETTER TO HIS SON.

BY DR. R. W. SHUFELDT AND MISS M. R. AUDUBON.

Plate IX.

IT IS the celebrated artist Cruikshank to whom the honor is due for having made the first published portrait of America's well-beloved ornithologist — Audubon. The naturalist at that time was about forty years of age and the picture, now destroyed by fire, was a miniature. Inman also succeeded in obtaining a fine portrait of him, which is the one that was reproduced in his Biography. His son John secured still another, one of the most valuable now in existence, it being a full-length with his favorite dog at his feet. These three portraits have been published and republished as engravings at various times and in various places, so that they are now well-known to all the many readers of Audubonian literature. A thus far unpublished and another greatly cherished portrait of the naturalist has been described in 'Scribner's Magazine' for July, 1876 (p. 335). This, too, was painted by the fond hand of the same son who painted the full-length picture, to which we have referred above. Finally, by the aid of a mirror, Audubon made a small oil-painting of himself, and this picture has already been reproduced in the pages of the present magazine, with a description of it.[1] By those who have seen it, and by members of the family, his immediate descendants, this last has been pronounced an excellent likeness. The original is the property of Mrs. E. C. Walker, of Baton Rouge, La., and is the earliest portrait of the naturalist known to us.

It is now the aim of the authors of the present contribution to bring before the many readers of 'The Auk' what proves to be a portrait of Audubon heretofore not given to the world. In one way, at least, it is of greater value and interest than any of the other portraits extant, — priceless as they really are. The

[1] 'The Auk,' Vol. III, No. 4, October, 1886, pp. 417-420. The portrait was awarded the frontispiece.

special superiority claimed for it lies in the fact, that it is a *camera-portrait*, and consequently portrays its every line true to life. It was not so very long ago when one of the writers of this article discovered in the possession of Professor T. W. Smillie, the well-known photographer of the United States National Museum of Washington, a daguerreotype of Audubon, that belonged to Mrs. Grimshaw, a daughter of Mrs. Nicholas Berthoud, and a niece of Mrs. Audubon's, who had placed the treasure on deposit in the above-named institution. Mrs. Grimshaw kindly consented to our having a photographic copy made of this daguerreotype, which was accomplished through the consummate skill of Professor Smillie, and with the courteous permission of Doctor G. Brown Goode, the distinguished officer in charge of the National Museum. From this excellent photograph has been made the admirable plate which illustrates the present paper. A picture so fine as this one surely requires no comments on the part of its contributors to 'The Auk'; it has but to be seen by any of its readers to be admired. From all that we have been able to gather, it would seem that this daguerreotype was taken by Brady of New York City some time during the summer of 1850. As the naturalist was born, as near as we have been enabled to ascertain the date, some time in May, 1780, and died on the 27th of January, 1851, this picture must have been obtained when he was in the seventieth year of his age, and at a period only a few months prior to his death. With the view of obtaining as full a history of it as possible, we recently placed ourselves in communication with the Rev. Dr. A. Gordon Bakewell of New Orleans, La., one of the most charming of the old-school divines of the Episcopal church, who is a son of Thomas Bakewell, and was a favorite cousin of the late John Woodhouse Audubon, the father of the co-author of the present article.

Doctor Bakewell writes us that Mrs. Gordon, one of Mrs. J. J. Audubon's sisters, just before her death, presented the daguerreotype to Mrs. Grimshaw, and that the former received it direct from the wife of the naturalist. "It was the last picture taken from life shortly before Mr. Audubon died, and it certainly is very like him, when I last saw him toward the latter end of his earthly journey."

These quoted words of Doctor Bakewell's complete, in so far as facts go, all we have been enabled to gather in regard to the actual history of this portrait. In placing it here, we not only give ourselves great pleasure, but we do more, for we add still another to the list of the published portraits of that one of this country's celebrated naturalists whose fame augments *pari passu* with the march of time.

Standing next in value to published Audubonian portraits are published Audubonian letters, and we feel that it hardly requires any apology from us, when we say that we know of no more fitting way to conclude this article than by adding to it a hitherto unpublished letter of Audubon's, addressed to his son John W. Audubon, 4 Wimpole Street, Cavendish Square, London. It will be seen upon perusal that this letter is brimful of interest, both of a personal and an historical nature. It reads as follows:—

"*Edinburgh, July 1st, 1838, Sunday.*

"MY DEAREST FRIENDS

"Your joint letter of the 27th Wednesday, did not reach me until yesterday afternoon, probably because the steamer which brought it did not leave London on that evening on % of the coronation etc., Here the festivals were poor beyond description, and although scarcely anything was to be seen, the whole population was on foot the entire day, and nearly the whole night, gazing at each other like lost sheep.—No illuminations except at two shops, Mr. Henderson's and another close by him.—The fireworks at the castle consisted merely of about one hundred rockets, not a gun was fired from the batteries. MacGillivray & I went to see the fireworks at 10 P. M, and soon returned disgusted.—His museum (College of Surgeons) and the Edinburgh Museum were thrown open *gratis*, and were thronged to excess. Upwards of 20000 in the first, and about 25000 in the other; all was however quite orderly. The day was showery; cloudy and dismal at times, but the evening was clear and fine.—Mr. Hill's father died on the morning of the 27th and I have not seen Alex. H., since. Many thanks to Maria for her bunch of letters, and the few lines of her own to me, I hope that everything will go on well with you all.

"We begin printing *tomorrow 2d of July, 1838!!* remember that Mesdames et Messieurs! and I intend to proceed with all possible despatch and care. *All* the birds in rum will be inspected as far as internal or digestive organs, trachea &c are concerned, and as I am constantly present in the dissecting room, I think I shall know something about the matter anon.— I am almost in hopes to see Victor tomorrow night but cannot be sure. There are somewhere at home the nests of the birds found on the Columbia by Nuttall and Townsend, I believe that of Bewick's Wren is among them; send them *all*, very carefully packed. I want the journal of my first trip to the Floridas, which was cut out of my large leather journal, previous to going to Labrador, also a letter on the habits of the Yellow-bellied Cuckoo, by a gentleman at Charleston. If it cannot be found perhaps Maria will recollect his name, being a friend of John Bachman, if so send me that, *in full*, if possible. It is the gentleman in whose garden I procured the small and large cuckoos in the same nest.—

"I have written fortyfour articles for my appendix and will continue whenever I am not otherwise engaged, so as to save time at last.—I am sorry for the death of poor Wickliffe but glad that his brother was with him at New York previously, and that we, at least, have done all we could for him. MacGillivray is quite well, and works very hard, poor fellow—I am glad of John's repainting the head by VanDyke, two copies of such heads are valuable to him, besides his improving by so working —When Victor has left for this place, John must pay much attention to the colourers and call also on the book binder. Havell ought to exert himself in having some 4th vols; delivered as soon as possible.

"My last letter which was written last Sunday, was put too late in the office, which closed on that day at two o'clock, and did not therefore leave this till four o'clock on Monday afternoon; this one will have a better chance, for I will take it myself to the general office. I have seen no one hardly since my last, I am indeed as busily engaged as ever, and rarely go to bed before eleven — being with Mr. MacGillivray until generally past ten, describing etc., I rise at four or earlier, he at ten; but I go to bed at eleven, he at two. I discovered that he was adverse to the examination of the intestinal canals etc.,

because many of my birds which are common to both countries will be published before his 2d vol., can now possibly be; but as soon as I told him that I had already said in my introduction, that the anatomical structure was declared to be *his*, he was much pleased and began on the instant.

"Today is very dismal, and it will rain probably until night; I wish we had here some of the warm weather of which dearest Mamma speaks. I have had but one walk to Arthur's Seat, but now and then I stroll to the meadows which are close to me, and now look well.—From the window of my sitting room I overlook the garden of Mr. Frazer our printer, and now and then speak to him there, I have not yet however visited him.—I will recollect the Queen's farthing when next I see Professor Wilson, but doubt much if he will recollect the least idea of it. Has Charley written or said anything to Victor about the review of the work; remember me to Healey.—

"I suppose that the crown of England sits very quietly down, and that all was very superfine. I have not so much as seen a paper since I left you.

"God bless you all, dearest friends, take good care of Mamma and Maria.

"Ever your firmly attached father and friend

"J. J. AUDUBON.

"*No. 7 Archibald Place,*
Lauriston."

Up to the present time there has been no personal letter of Audubon's published which so clearly shows, as this one does, the precise relations between Macgillivray and himself. Although it testifies to the fact that the former is entirely responsible for the anatomical descriptions of 'The Birds of America,' it likewise goes to show that Audubon took a lively and personal interest in a great many of those dissections, and, in all probability, was often at Macgillivray's side while they were being made, — not as a mere looker-on, but to follow him with that keen intelligence during their progress which characterized his every undertaking in the science he loved so well, and in which he has made a name as enduring as the great truths in the foundation upon which modern ornithology itself is reared.

RECENT LITERATURE.

Mrs. Wright's 'The Friendship of Nature.'—Although not a 'bird book' in a strictly ornithological sense, Mrs. Wright's 'The Friendship of Nature'[1], as its subtitle—'A New England Chronicle of Birds and Flowers'—indicates, deals with birds to a sufficient extent to warrant reference to her charming book in the pages of 'The Auk.' If no new facts in bird life are 'chronicled,' her frequent allusions to birds have a poetic setting and a background that render her book one of unusual literary merit and peculiarly fascinating to every lover of nature. The book consists of eleven chapters, nearly all for the first time here published. Some hint of the method of treatment may be gathered from the titles as follows: 'A New England May-Day'; 'When Orchards Bloom'; 'The Romaunt of the Rose'; 'The Garden of the Sea'; 'A Song of Summer'; 'Feathered Philosophers'; 'Nature's Calm'; 'The Story of a Garden'; 'Rustling Wings'; 'The Loom of Autumn'; 'A Winter Mood.'

The author easily takes first rank as a poet of nature, her book being truly a poem in prose. In general her allusions to the varied objects of nature, whether animals or plants, or things inanimate, are wonderfully truthful and show not only keen powers of observation but broad culture. The twelve illustrations are most happily chosen and exceedingly well reproduced in photogravure.[2] We consider that we do our readers a favor in calling attention to the intellectual treat the book offers to those in friendship with nature.—J. A. A.

Shufeldt's 'Comparative Oölogy of North American Birds.'[3] — In a paper of somewhat over 30 pages, Dr. Shufeldt attempts "to bring together what is already well known in regard to the oölogy of North American birds, placing it before the ornithologist in a more condensed form than it is usually given and in a comparative way." Much of this is 'placed' in the form of comparative tables, compiled mainly from Coues's 'Key' and Ridgway's 'Manual.' Much stress is here and there laid upon the "discrepancies" found in the descriptions of different authors

---

[1] The Friendship | of Nature | A New England Chronicle of Birds | and Flowers | By | Mabel Osgood Wright | With Twelve Full-page Illustrations | from Photographs by the Author | New York | Macmillan and Company | and London | 1894 | All rights reserved.—8vo. pp. viii + 238. 12 photogravure illustrations.

[2] The work appears, however, in two editions, the smaller in ordinary 12mo. size, with merely a frontispiece. The larger, or 'large paper' edition, is limited, we believe, to 300 numbered copies.

[3] Comparative Oölogy of North American Birds. By R. W. Shufeldt. Rep. U. S. Nat. Mus. for 1892 (1894), pp. 461–493.

in respect to the number, size, color, and markings of the eggs of the same species of birds. In only rare cases, however, do the discrepancies seem to be important, considering the purposely general character of the statements referred to, and the variability in all these features the eggs of the same species are so well known to present.

In these comparative tables and the accompanying text, we have a convenient summary of the subject, without any claim to the presentation of any new facts, or rarely any new generalizations. In the matter of the latter, and in the way of general statements respecting the character of the eggs and the nesting habits of many of the higher groups, quotations are freely made from the writings of Professor Newton and Dr. Sharpe.

Very little attempt is made to use the facts of oölogy in a taxonomic sense, beyond what has been done by previous authors, where in a few cases, as pointed out by Newton, they may be employed to advantage. Yet the fact remains that birds of certain groups, as genera or families, in all other respects closely related, vary greatly as to the number, shape, and coloration of their eggs, and in nesting habits. We have here, however, apparently an expression of our author's latest views on the classification of birds, as respects the affinities of certain ordinal or sub-ordinal groups, as we find the Owls (Striges) dissociated from the other Birds of Prey and placed between the Woodpeckers and Goatsuckers; the Hummingbirds stand between the Goatsuckers and the Swifts; and the families of the Passeres are very much transposed from their usual order, the Finches (family Fringillidæ) following the Paridæ, while next in order stand the Icteridæ, Corvidæ, and Sturnidæ, the latter closing the series of Passerine birds. We have no doubt, however, that the placing of the "so-called 'grosbeaks'" (p. 484) under the Icteridæ is a typographical mishap, as the paper contains at various other points evidence of careless proofreading.

Near the close of the paper we have various quotations from Newton, of some general statements about birds' eggs, particularly as to the manner of deposition of the shell-markings, which are, however, not quite in accord with Dr. Gadow's recent statements on the same subject (see Newton's Dictionary of Birds, Art. 'Embryology,' pp. 197, 198). We have again a restatement, in substance, of Wallace's well-known ideas, especially as elaborated by Dixon, respecting the coloration of birds' eggs in relation to the color of the birds themselves and the character of the nest in which the eggs are placed; and, under 'Concluding Remarks' (pp. 487–493), an attempt to correlate "some of the oölogical peculiarities of the birds of North America" with these generalizations. The concluding paragraph of the paper is devoted to suggestions as to how to study and describe the eggs and nesting habits of birds, which, like the paper as a whole, scarcely rise above the plane of the common place, being designed perhaps rather for the beginner than for the advanced investigator.—J. A. A.

Shufeldt's 'Scientific Taxidermy for Museums.'[1]—This memoir is presented by Dr. Shufeldt as the result of studies of mounted specimens largely in the collections of the United States National Museum, made by him at the request of the authorities of that Institution. As an expert whose opinion could be considered authoritative, he was desired to make a critical examination of the specimens of taxidermy displayed "in the National Museum and Smithsonian Institution" and to suggest plans for further improving exhibits of this nature.

Dr. Shufeldt's essay opens with a general review of the taxidermist's profession and its requirements. He compares the old with the 'New Taxidermy' and, in our opinion, rightly claims for the latter a place among the arts. Then follows a detailed consideration of many examples of the taxidermist's skill, including representatives of Invertebrates, Fishes, Reptiles, Birds, and Mammals. This part of the paper, covering 48 pages, is very fully illustrated by 82 full-page half-tone plates from photographs of the specimens described and commented upon.

Dr. Shufeldt's remarks are timely. The day has arrived when the work of the artist-taxidermist should receive the attention it deserves. The day has passed when the name taxidermist can be applied to the whole group of animal stuffers and mounters, from the village barber, who 'sets up' a pet cat or canary, to the expert modeller of a bison.

It is only within comparatively recent years that taxidermy could rightly claim rank as an art. Its development is in part due to the cumulative agency of transmitted experience, but more especially to the establishment of departments of taxidermy in our large museums. Here, secure of a salary which is in no way affected by the amount of work performed, the artist-taxidermist can give full scope to his originality. Patience and an unlimited amount of time are absolutely necessary adjuncts of the higher class of taxidermy. For this reason, even when other things are equal, the commercial taxidermist cannot compete with the museum worker. If the former should devote one half the time to his subjects that the latter conscientiously gives to his, he would become bankrupt. His customers, the public, are not educated to a proper appreciation of truly artistic taxidermy and they are therefore given no more than their money's worth. In other words, they pay a low price for an inferior class of work.

Dr. Shufeldt is therefore to be thanked for his clear exposition of the differences which exist between the trade and the art of taxidermy. Let us hope his words will so open the eyes of the public to the merits of this new art that a taxidermist may feel warranted in establishing a studio whose patrons shall not be purchasers of rugs and feather screens, but in a strict sense patrons of the arts.—F. M. C.

---

[1] Scientific Taxidermy for Museums (Based on a Study of the United States Government Collections). By R. W. Shufeldt, M. D. Report U. S. Nat. Mus. (for 1892), pp. 369–436. Pll. xv–xcvi. Washington, 1894.

Stone's Revision of the Genus Anous.[1]—Mr. Stone recognizes seven species of the genus *Anous*, one of which, *A. atrofuscus*, is described as new, and he has apparently done good service in straightening out the complicated synonymy of the group. A synoptic table is given of the species.—J. A. A.

Stone on the Old World Rallinæ.[2]—Says Mr. Stone: "Having had occasion to make a thorough investigation of the literature bearing upon the Old World Rails, I think it desirable to prepare the following list of the described species and genera which brings together in one paper all the references to published descriptions. Lack of sufficient material has prevented me from making a monographic study of the group, but where specimens were at hand I have been able to judge of the specific relations of various described forms and to arrange the synonymy accordingly." Mr. Stone's paper was prepared independently of Dr. Sharpe's recent work on the group, as finally set forth in Vol. XXIII of the British Museum 'Catalogue of Birds,' which appeared almost coincidently with Mr. Stone's paper. Mr. Stone, however, refers to Sharpe's paper on the Rallidæ published in 'The Ibis' in 1893. It is therefore of interest to compare the views of the two authors. The number of genera recognized for this group by Mr. Stone is 23, with 3 additional subgenera; by Mr. Sharpe, 33. Mr. Stone formally recognizes 88 species; Mr. Sharpe, 88,—a remarkable agreement in respect to the number of species admitted. The order of arrangement of the genera is very different in the two publications.

Mr. Stone gives a chronological list of the "generic names which have been proposed for the Old World Rails"— 38 in all—from 1758 to 1893, excluding, however, a number proposed by Heine in 1890. In commenting on these names, he states that *Ortygometra* Leach is simply a synonym of *Crex*, though wrongly used in another connection. He disapproves of Mr. Sharpe's recognition of so many generic divisions of the old genus *Porzana*, and considers that while *Zapornia* and *Coturnicops* (='*Ortygops*' of Sharpe) may stand as subgenera, *Phalaridion* and *Rallites* must be regarded as merely synonyms of *Porzana*. No new names, either generic or specific, appear to be proposed, but two generic names that have been in more or less common use are shown to be preoccupied, and later names are properly adopted in their stead; namely, *Sarothrura* Heine for *Corethrura* Reich.; *Euryzona* Bon. for *Rallina* Reich. nec Gray. The body of the paper consists of a synonymic list of the genera and species, with their habitats, and more or less technical comment on questions of nomenclature.—J. A. A.

---

[1] A Revision of the Genus *Anous*. By Witmer Stone. Proc. Acad. Nat. Sci. Phila., 1894, pp. 115–118.

[2] A Review of the Old World Rallinæ. By Witmer Stone. Proc. Acad. Nat. Sci. Phila., 1894, pp. 130–149.

Wallace on 'Palæarctic' and 'Nearctic'.[1]—Again Mr. Wallace comes forward in defence of "the six regions established by Dr. P. L. Sclater," which he still claims as "the most natural and convenient" that "have been established." The reason for this is that "of late years," as he says, "many eminent naturalists, both in America and Europe, have proposed other regions, though hardly any two of these agree with each other." While this latter claim may be true, they do practically agree in uniting "the Palæarctic and Nearctic Regions so as to form one new region." To refute this grave heresy is the purpose of Mr. Wallace's present paper, which, in his own opinion, he succeeds in doing in a very satisfactory manner. But we fear he has not succeeded to any great extent in convincing the heretics. He says, most truly, that "the reason why so much difference of opinion exists on this point, when the very same facts are before all the enquirers, seems to be that they treat the facts in different ways." And the way Mr. Wallace here treats them tends most effectually to mislead and obscure the real points at issue; besides, he makes several misstatements that have an important bearing on the case, as will be noted later.

Mr. Wallace thinks that "far too much stress is laid upon the comparatively small number of absolutely peculiar genera or families in the two temperate regions," since, in his opinion, "the facts clearly show that the differences very far surpass the resemblances." In proof of this he tabulates the families and genera of the mammals and the land birds of the two regions, to show which are common to the two and which are peculiar to one or the other. From these tables he educes statistics which, as employed by him, appear to make an excellent showing for his side of the controversy. But to do this he necessarily ignores certain very fundamental facts and principles. No reference is made, for example, to the eminently homogeneous character of the life of the whole northern half of the northern hemisphere, nor to the fact that the differentiation of the two regions—'Palæarctic' and 'Nearctic'—is almost wholly limited to their warmer portions; nor to the fact that quite a percentage of the types given by him as peculiar to one or the other of these regions are merely intrusive forms that extend from the tropics northward just a little way into the southern border of his two regions. Furthermore, as regards especially the mammals, about one-ninth of the genera given as peculiar to either the 'Nearctic' or 'Palæarctic' should be transferred to the column of "common to both regions," as for example three of his six genera of Pinnipeds. Besides, no account appears to be taken of the important fact that in comparatively recent geological times the life of the 'Palæarctic' and the 'Nearctic' was much more closely related than at present.

Mr. Wallace further claims that the differences between the 'Nearctic' and the 'Palæarctic' "are, in fact, fundamental, and are far greater than

[1] The Palæarctic and Nearctic Regions compared as regards the Families and Genera of their Mammalia and Birds. By Dr. Alfred Russell Wallace, F. R. S. Natural Science, Vol. IV, June, 1894, pp. 435–445.

can be found in the separate halves of any of the other [zoölogical] regions, unless they are so divided as to be very unequal in area or to present very great differences in climate. But the Palæarctic and Nearatic Regions are, roughly speaking, equal in area." As to the latter statement, a glance at a map of these regions shows at once that the land area of the 'Palæarctic' is fully *three times* that of the 'Nearctic.' We are glad to see here, however, a tacit admission that climate may have something to do with the distribution of life. As to the other allegation, if Mr. Wallace will make the same kind of comparison between his Mediterranean and Manchurian 'Subregions' as he makes between his Palæarctic and Nearctic 'Regions,' he will find as high, and probably a much higher, ratio of difference than he so ingeniously figures out for the latter; it being in these areas also, that the chief differentiation of the 'Palæarctic' from the 'Nearctic' occurs. Of course Mr. Wallace would not think of contrasting the northern and southern halves, respectively, of his Nearctic and Palæarctic, owing to the contrast of climate, but should he be induced to do so he would find not only a far greater contrast between them than he now finds between 'Nearctic' and 'Palæarctic,' but that the northern half of the 'Palæarctic' has a far closer resemblance to the northern half of the 'Nearctic' than it has to the southern half of the 'Palæarctic.' (*Cf.* Bull. Am. Mus. Nat. Hist., IV, 1892, pp. 208–211.)

Finally Mr. Wallace works himself up to the claim that the 'Palæarctic' and 'Nearctic' Regions, in comparison with other 'Regions,' "are really exceptionally distinct. They are certainly much more distinct than are the Oriental and Ethiopian Regions, and are probably quite as distinct as are any two conterminous regions." We have already intimated how this conclusion is reached. We will only say in conclusion that we regard the so-called Oriental and Ethiopian 'Regions,' and the Palæarctic and Nearctic 'Regions,' as life areas of the second rank, — not as primary areas, as Mr. Wallace does, — the former together forming an Indo-African Realm, and the latter a North Temperate Realm, both being areas of primary grade, and their components respectively areas of secondary grade. (*Cf.* Bull. U. S. Geogr. and Geol. Surv. Terr., Vol. IV, No. 2, 1878.) Of course, our North Temperate Realm is equivalent to the 'Holarctic' of Newton and some other recent writers, who are unable to see the propriety of longer recognizing the 'Palæarctic' and 'Nearctic' as distinct primary regions. The case of Palæarctic and Nearctic all turns on the question of whether life areas shall be laid out in such a way as to give 'convenient and easily-remembered boundaries,' regardless of other contingencies, or whether they shall be based on the actual conditions of life, and their boundaries be so regulated as to conform to, and illustrate, the facts of geographic distribution.—J. A. A.

Publications Received.—**Bendire**, Charles. Descriptions of Nests and Eggs of some New Birds, collected on the Island of Aldabra, Northwest

of Madagascar, by Dr. W. L. Abbott. (Proc. U. S. Nat. Mus. XVII, pp. 39–41.)

Chapman, Frank M. The Nocturnal Migration of Birds. (Pop. Sci. Month., August, 1894, pp. 506–511.)

Gurney, J. H. (1) On the Birds of the Farne Islands. (Trans. Norfolk and Norwich Naturalists' Soc., Vol. V., pp. 52–58.) (2) Occurrence of the Tropic Bird in England. (*Ibid.*, p. —.) (3) Irish Rock Birds. (*Ibid.*, pp. 550–555.) (4) Fauna and Flora of Norfolk. Additions to Part XI, Birds. (*Ibid.* pp. 642–649.)

Hancock, Joseph L. Ornithophilous Pollination. (Am. Nat., 1894, pp. 679–683.)

Hinxman, Lionel W., and William Eagle Clarke. A Contribution to the Vertebrate Fauna of West Ross-shire. (Proc. Roy. Phys. Soc. Edinburgh, XII, pp. 377–415.)

Loucks, W. E. The Life History and Distribution of the Prothonotary Warbler in Illinois. (Bull. Illinois State Labr. Nat. Hist., IV, pp. 10–35, and map.)

Maynard, Charles J. Contributions to Science, Vol. II, No. 1, July, 1894.

Schalow, Herman. Darf die Erforschung der deutschen Vogelwelt als abgeschlossen betractet werden? (Journ. für Orn., 1894, pp. 270–279.)

Shufeldt, R. W. (1) On cases of Complete Fibulæ in existing Birds. (Ibis, 1894, pp. 361–366.) (2) On the Osteology of Cranes, Rails, and their Allies. (P. Z. S., 1894, pp. 250, 251.) (3) Scientific Taxidermy for Museums. (Rep. U. S. Nat. Mus. for 1892, pp. 369–436, pll. xv-xcvi.) (4) Comparative Oölogy of North American Birds. (*Ibid.*, pp. 461–493.) (5) The American Barn Owl. Some Peculiar Nesting Sites. (The Great Divide, July, 1894.) (6) The Introduction of Birds. (7) Giants Among Woodpeckers. (*Ibid.*, August, 1894.) (8) The American Osprey. *Ibid.*, April, 1894.)

Stejneger, Leonhard. Notes on Japanese Quails. (Proc. U. S. Nat. Mus., XVII, pp. 205, 206.)

Stone, Witmer. A Review of the Old World Rallinæ. (Proc. Acad. Nat. Sci. Phila., 1894, pp. 130–149.)

Suchetet, André. Les Oiseaux Hybrides. Quatrième Partie. Accipitres. (Mem. Soc. Zool. de France, VI, pp. 453–472.)

Actes de la Soc. Scien. du Chili, IV, livr. 1, May, 1894.

American Journ. Sci., July–Sept., 1894.

American Naturalist, July–Sept., 1894.

Annals of Scottish Natural History, No. 11, July, 1894.

Aquila. Zeitschrift für Ornithologie. Organ des Ungarischen Centralbureaus für Ornith. Beobachtungen, I, No. 1, July, 1894.

Biological Review of Ontario, I, No. 3, July, 1894.

Bulletin British Ornithologists' Club, No. 19, June 30, 1894.

Canadian Record of Science, V, No. 8, Oct., 1893.

Forest and Stream, XLIII, Nos. 1–12, 1894.

Journal Cincinnati Soc. Nat. Hist., XVII, No. 1, April, 1894.

Naturalist, The, A Monthly Journ. Nat. Hist. for North of England, Nos. 228–230, July–Sept., 1894.

Nidiologist, The, I, Nos. 9–12, May–Aug., 1894.

Ornithologische Jahrbuch, V, Heft 4, 1894.

Ornithologische Monatsberichte, XI, No. 7–9, July–Sept., 1894.

Ottawa Naturalist, VIII, Nos. 4–6, July–Sept., 1894.

Proceedings and Trans. Nova Scotia Inst. Sci., Sec. Ser., I, Part 3, 1893.

Zoölogist, The, July–Sept., 1894.

GENERAL NOTES.

Oceanodroma townsendi off San Diego, California.—From the time of my introduction to the Sea-birds of Southern California in 1887, I have seen at intervals, a black Petrel, which I quite naturally supposed was *Oceanodroma melania*. They are seen in companies of not more than three, more often solitary, and at quite a distance from land. In August and September, however, they are sometimes seen along the kelp beds near shore and on one or two occasions one was seen in the bay at San Diego, but they never enter the bay except in foggy weather or at night.

July, August and September seem to be the months in which they are most common, though I think I have seen them occasionally nearly all the year.

Owing as much to their extreme restlessness as to their shyness, I could never secure specimens. Not the slightest attention was paid to bait thrown over to them, or to other sea-birds that might be following the boat, therefore the capture of a single specimen off this port on Sept. 1 of the past year was somewhat of a surprise to me.

Starting from the Coronado Islands about 20 miles south of San Diego, on the morning of the above date, I sailed in a westerly direction until noon, when I was about 40 miles from San Diego and almost due west. Several Petrels were seen during the morning but none offered a chance for a shot. *Puffinus gavia* was seen at intervals, but the large flock which is usually to be found in this locality at this season, and which I was in search of, was not to be found. It was decided to look for them nearer shore, and the sloop was headed for San Diego, under a fair but light breeze. When about 30 miles off shore, a flock of not less than 200 Petrels was sighted coming toward the sloop, on a course that would take them about a quarter of a mile south of us. They were flying just above the water in a somewhat loose flock, with a long string of

stragglers reaching half a mile or more behind, all apparently feeding. An attempt was made to intercept the main flock, but owing to the light breeze only the stragglers were overtaken and but one secured. Over an hour was spent in a fruitless attempt to again overtake them, but as they were working directly to windward, and the breeze was very light, we always passed about two gunshots behind the last.

I was unable to discover what they were feeding on, as the specimen secured contained nothing but a reddish oil. All were, however, apparently picking up something from the surface of the water, which appeared to be slightly agitated as by a school of very small fish, or a light wind. Their flight was strongly suggestive of that of the Nighthawk, with this exception, that when pausing to pick up or investigate an object on the water, the wings were held higher and the wing beats considerably increased for the moment. Only a few were seen to alight, and then for an instant only.

With the exception of a few birds which at a distance strongly resembled *Halocyptena microsoma*, all appeared to be like the specimen secured, which Mr. Ridgway has kindly compared with his type of *O. townsendi* and pronounced to be of that species. From my observations I should say that Townsend's Petrel was of regular though perhaps somewhat rare occurrence in deep water as far north as the Santa Barbara Channel.—A. W. ANTHONY, *San Diego, Cal.*

The Canada Goose and Osprey laying in the same Nest.—Mr. Charles de B. Green, who spends a good deal of his spare time in making collections for the Museum, writes me from Kettle River, Okanagan District, British Columbia, to the effect that while climbing to an Osprey's nest he was surprised to find his actions resented by not only the Ospreys but also by a pair of Canada Geese (*Branta canadensis*), the latter birds making quite a fuss all the time Mr. Green was in the tree. On reaching the nest he was still further surprised to find two Osprey eggs and three of the Canada Goose. He took the two Osprey's eggs and two of the Geese eggs.

This was on the first of May. On the 12th of May he returned and found the Osprey setting on the Goose egg; the geese were nowhere in sight. Mr. Green took the remaining egg and sent the lot to the Museum.

I am aware that it is not unusual for the Canada Goose to nest in trees but for two birds with such strangely opposite habits as the ones above quoted to enter into partnership in the matter of rearing a family is in my experience somewhat strange.

I may mention in this connection that in the Okanagan District, especially along the valleys of the Kettle and Similkameen Rivers, Canada Geese are particularly noted for nesting in trees, and as these valleys are subject to sudden inundation during early spring, this fact may have something to do with it.—JOHN FANNIN, *Provincial Museum, Victoria, B. C.*

The Food of Wild Ducks.— In December, 1893, Mr. William Dutcher brought to me the stomach contents of a Harlequin Duck (*Histrionicus histrionicus*) shot at Montauk Point, Long Island, about the 3rd of the month. An examination of the material showed what an industrious collector the bird must have been, for it had in its crop remains of no less than three individuals of the small mud crab of our coast, *Panopeus depressa* Smith, one carapace being almost entire; besides remains of some other forms of Crustaceans. Of the little shell *Columbella lunata* (*Astyris lunata* of the Fish Com. Reports), there were no less than 39 individuals represented, besides several small Littorinas. This shell is seldom more than one-sixth of an inch long, and is usually quite rare on our shores. It could only have been obtained in such numbers by a sort of sifting of the bottom mud of the bays by the Duck, and indicates how carefully the process had been carried on in order to obtain so small an article of food.

The contents of the crop of an Eider Duck (*Somateria dresseri*) taken by Mr. Dutcher at Montauk Point, L. I., on March 25, 1894, contained the remains of five right claws of *Cancer irroratus*, our common sand crab, showing that he had dined sumptuously on this species on several occasions. The last dinner consisted of an individual entire, a small female burdened with a large quantity of eggs under the flipper, making an object nearly two inches by one and three-eighths, and almost an inch thick, which he must have taken into his crop at a single gulp, without even disturbing a limb.

From the stomach of a King Eider (*Somateria spectabilis*) the contents of which Mr. Dutcher sent, I find the objects so thoroughly comminuted that but little can be identified. The hand and figure of *Cancer irroratus*, young shells of *Mytilus edulis*, and a young shell of *Lunatia heros* Say, which still retains the horny operculum, is all that can be recognized.

Two gizzards of wild Ducks, the contents very much comminuted, furnish, one of them, the almost entire carapace of *Carcinus amœnus* Linn. sp. (= *Cancer granulatus* Say,) measuring about three-fourths of an inch in diameter, the limbs all removed and the whole badly macerated. There were also fragments of *Cancer irroratus*, our common sand crab, and quite a quantity of young mussles (*Mytilus edulis*) none of which measured more than one-half an inch in length. A second gizzard gave evidence of three or four specimens of the small mud crab, *Panopeus depressus*, with many fragments of mussle shells, but nothing else which could be determined.

There is nothing among these remains which would indicate that the birds had been feeding at different localities within a few days of the time they were shot. On the contrary all the contents of their crops and gizzards would show that their food had been for some days obtained in or near our own waters, or at least within the limits of our own coastal fauna, and that crustaceans form a very large percentage of their food during the spring months of the year.— R. P. Whitfield, *American Museum of Natural History, New York City.*

The Scarlet Ibis (Guara rubra) in Colorado.—My friend Mr. Livesey informs me that whilst he and a party of friends were duck shooting on Grape Creek in Wet Mountain Valley, Custer County, Colorado, in the month of May, 1876, one of the party shot an exceedingly fine specimen of this rare visitor. This bird was skinned and afterwards mounted by a well known firm of taxidermists. So far as I am aware, this specimen, which is now in Mr. Livesey's possession, was never recorded, and hence my reason for making mention of it.—WILLOUGHBY P. LOWE, *Pueblo, Col.*

The Sandhill Crane (*Grus mexicana*).—A Correction.—In 'The Auk,' Vol. VIII, pp. 308, 309, I mentioned the capture of this bird, but I expressed my doubts in the article as to its positive identification. It proves to be the Little Brown Crane (*Grus canadensis*) by careful measurements and comparison with a specimen of *Grus mexicana* from Florida. I can find but one other record of this bird for the Atlantic coast, viz.: Brewster, Auk, Vol. VII, p. 89.—ARTHUR T. WAYNE, *Mount Pleasant, S. C.*

The Northern Phalarope.—A Correction.—In my article 'Notes on Certain Water Birds in Massachusetts' (Auk, XI, July, 1894), at end of third line from bottom of page 226, read *Northern*, for Red. In last word of article, page 228, read *April*, for May.—GEO. H. MACKAY, *Nantucket, Mass.*

Colinus virginianus cubanensis not a Florida Bird.—Being responsible for the introduction of the Cuban Bob-white into the North American list, I desire to state that its introduction was an error, explainable as follows:—

The only Cuban examples of the genus in the National Museum collection, although not agreeing very well with the original description and colored plate of *Ortyx cubanensis* Gould, were naturally supposed to be that subspecies. Birds from southwestern Florida proving to be more like these than examples from more northern localities in Florida (including those from Miami, on which *Ortyx virginianus* var. *floridanus* Coues was based), in fact practically indistinguishable from them, it seemed necessary to refer them to the Cuban form. Mr. Chapman has since shown, however (Bull. Am. Mus. Nat. Hist., IV, 1893, No. 1, p. 290), that two very distinct forms occur in Cuba, the true *Ortyx cubanensis* Gould, which is apparently confined to the mountains, and a form which is "typical of the very dark Quail from southern Florida," which latter he is inclined to think may have been introduced into Cuba. Mr. Chapman having kindly allowed me to inspect his Cuban specimens I am able to state that the specimens from southern Florida referred by me to *cubanensis* are not that bird, but, unless distinguished by a new name, must be referred to *floridanus*.—ROBERT RIDGWAY, *U. S. National Museum, Washington, D. C.*

Baird's Sandpiper near Washington, D. C.—On Sept. 3, 1894, while collecting Sandpipers and other birds on the floating confervæ on the flats in the Potomac River, off the mouth of Four Mile Run, Alexandria County, Virginia, I took a fine immature male specimen of *Tringa bairdii*. This specimen has been identified by Mr. Ridgway and is the first recorded instance from the Virginias and the District of Columbia. It was alone at the time, though hundreds of individuals of *Ereunetes pusillus*, *Tringa maculata* and *Totanus flavipes* were flying about or feeding on the surface of the confervæ.—R. S. MATTHEWS, *Washington, D. C.*

The Ruff and Western Sandpiper near Washington, D. C.—With other Waders on the confervæ off the mouth of Four Mile Run, Alexandria County, Virginia, I collected on September 3, 1894, an immature female *pavoncella pugnax*. The condition of the specimen would warrant the belief that it was bred on this continent.

I also took on September 8, at the same place, an immature male *Ereunetes occidentalis*, which is the first record from this locality. In contrast with the excessive fatness of many specimens of the Least and other Sandpipers taken lately at the same place, both the above, especially the Sandpiper, were quite lean. A second specimen, an immature female, was taken on Sept. 11, at the same place, by Mr. R. S. Matthews. These specimens were seen and identified by Mr. R. Ridgway.—WILLIAM PALMER, *Washington, D. C.*

An Asiatic Cuckoo on the Pribylof Islands, Alaska.—An adult male Cuckoo (No. 118864 U. S. N. M. Coll.) that I collected among the sand dunes of Northeast Point, St. Paul's Island, on July 4, 1890, has been identified by Dr. L. Stejneger as *Cuculus canorus telephonus* (Heine). This bird, whose summer habitat is Japan and Kamtschatka, has several times been taken on Bering Island. When collected it was busily engaged capturing some large flies, which are abundant on these islands, and with which its stomach was literally packed. It had been seen by the natives in the same place for more than two weeks, and was probably the same individual seen by myself on June 13, when becalmed in a fog off the eastern side of the same island, on which occasion it circled overhead like a Gull for some time while calmly inspecting the boat, and then moved off northwards.—WILLIAM PALMER, *Washington, D. C.*

The Capture of Basilinna leucotis in Southern Arizona. — While collecting in the high Chiricahua Mountains, in southern Arizona during the past summer, the writer had the pleasure of securing a specimen of *Basilinna leucotis*, a new bird to the United States.

During the early part of June a camp was made at Fly Park, a well wooded area southeast of the head of Pinery Cañon, at an altitude of about 10,000 feet. A boreal honeysuckle (*Lonicera involucrata*) grows

commonly through the scattered woods of spruce (*Picea engelmanni*), fir (*Pseudotsuga taxifolia*), pine (*Pinus ayacahuite*) and aspen (*Populus tremuloides*). The flowers of the honeysuckle attract great numbers of hummers, and hundreds of *Selasphorus platycercus*, and many *Eugenes fulgens* and *Cœligena clemenciæ* were seen daily about the clumps. Early on the morning of June 9, in company with Mr. Fred. Hall Fowler, the writer saw a female *Basilinna leucotis* sitting on a dead twig of a *Lonicera* bush close to the ground, warming itself in the rays of the rising sun. The white stripe on the side of the head was plainly visible, and led to its speedy capture. Subsequently others were looked for but none were seen.—A. K. Fisher, *Washington, D. C.*

Breeding of the Prairie Horned Lark (*Otocoris alpestris praticola*) near Pittsfield, Mass.—Sometime since I received a letter from Mr. Henry R. Buck, of Weathersfield, Conn., giving a detailed account of the discovery of a small colony of Prairie Horned Larks, evidently breeding, near Pittsfield, Mass. Although the old birds were not taken, they were carefully observed, and Mr. Buck's intelligent description of them, and of the nest and eggs he obtained leaves their identification scarcely open to question, as is shown by the following extracts from his letter. Mr. Buck writes: "This summer [1892] I became interested in a nest . . . . of *Otocoris alpestris*, which I thought was only a winter visitor here. Mr. C. H. Buckingham of Pittsfield, Mass., with whom I was walking, found the nest July 10, 1892. . . . The bird had built her nest in a sheep pasture, on the very top of a treeless mountain west of Pittsfield; on the ground of course. She could hardly have found a more unprotected spot, and had not roofed over the nest at all. It was about four inches in diameter, sunk even with the surface of the ground, and was composed of a thick wall of moss lined with dry grass, several locks of wool, and two or three leaves.

"The eggs were four in number, *fresh*, of about the same shape as an English Sparrow's, of a pale greenish ground color, spotted indistinctly but thickly with light brown and purplish. The spots are not at all clearly defined and not perceptibly thicker at one end than at the other. The eggs measure .62 × .84, .61 × .85 and .61 × .83 inches. No. 4 got cracked, so I did not measure it, but it was about the size of the others.

"We could not get a very close look at the bird, since she would sneak off when we were yet quite a distance from the nest, and after she had gone about forty yards would run unconcernedly about, among some rocks near there, but would always keep about the same distance away from us. If we followed her closely she would fly off with a steady, rapid motion of the wings, very like the flight of a Meadowlark. On the ground she ran easily and seemed to be able to go quite fast.

"We saw five or six other birds of the same kind near the place but could find no other nest. The birds were a little longer than a Bluebird—I should say about seven inches—but much plumper and stouter, reminding one of a Meadowlark in this respect. They were brown above and white

below, with the sides of the head below the bill, and also the throat, white, and a narrow black spot, shaped somewhat like a sickle, across the breast. I did not notice any black streaks on the sides of the head or the horns, but as I did not get very close, and did not look for them especially, it is not strange.

"On a second trip to the place, a week later, there was a very high wind blowing and we saw nothing of the birds."

This form of the Horned Lark has been already recorded as breeding in North Adams and Williamstown, Mass. (Faxon, Auk, IX, 1892, p. 201), as well as in Vermont, New Hampshire, and near Troy in eastern New York.—WILLIAM BREWSTER, *Cambridge, Mass.*

Capture of Clarke's Nutcracker in Crittenden County, Arkansas.—A specimen of Clarke's Nutcracker (*Picicorvus columbianus*) was killed at Earl, Crittenden County, Ark., about twenty miles west of Memphis, Tenn., about April 1, 1891, and sent to Memphis for identification. It came into my possession in the flesh, but was already somewhat decayed about the head. I partly mounted it, and putting it aside for the time it was almost forgotten. Some time afterward I had it remounted by a professional taxidermist, but on account of the poor condition of the skin he could not make a very nice specimen of it.—ROBERT H. MITCHELL, *Memphis, Tenn.*

Occurrence of Aphelocoma cyanotis in Western Texas.—In the U. S. Department of Agriculture collection there are three specimens of *Aphelocoma* in worn plumage, collected by William Lloyd in western Texas. Through the kindness of Mr. Robert Ridgway they were compared with the type of *Aphelocoma cyanotis* in the National Museum collection, and were found to be referable to that species. They differ from *cyanotis* in averaging a little smaller and in having a more slender bill, thus grading toward *woodhousei*, as might be expected, where the range of that bird is approached. In coloration, however, allowing for the slight difference due to the wearing of the plumage, they are identical with *cyanotis*, and in no way resemble *woodhousei*. The specimens were taken July 14, 18 and 21, 1890, at Paisano, the highest point (5082 feet) on the Southern Pacific Railroad in Texas, about 60 miles north of the Mexican boundary.—A. K. FISHER, *Washington, D. C.*

Icterus parisorum in Western San Diego County, California.—The first week in April of the present year I was encamped on the Tia Juana River about two miles south of the National boundary and eight miles from the coast. Scott's Oriole was not uncommon at this point, nor at a later camp about twenty miles from the coast and not far from ten miles south of the boundary. As the country is exactly similar to that north of the line in western San Diego County, it is not unreasonable to expect that the species will be found equally common and of regular occurrence in favorable localities through the southern part of this county. In 'The

Auk' of April, 1891 (Vol. VIII, p. 238), Mr. F. C. Brown records the capture of a specimen by Chas. H. Marsh in Telegraph Cañon, ten miles east of San Diego, and gives it as the first for California. It has been known for some time that the species is of regular and common occurrence through the eastern part of San Diego County as far as the western edge of the Colorado Desert, but the region just north of the boundary and to the west of the mountains has been explored but little heretofore.

Mr. F. Stephens once told me that he felt sure that it was the song of this species that he once heard at Campo, and expressed the belief that the bird would be met with in time nearer the coast.

In January, 1894, I found this Oriole wintering in the foothills just east of San Quintin, Lower Californa, and feeding extensively, if not altogether on the ripe fruit of the 'pitahaya' cactus (*Cereus gunnosus*). This fruit is about the size and shape of a small orange, bright scarlet when ripe. The flesh is similar to that of a ripe watermelon but much darker with an abundance of very small dark seeds. In flavor it is not unlike raspberries, but rather acid. Unless the fruit is abundant it is almost impossible to find any that has not been torn open and the inside eaten by the birds,—Thrashers, Mockingbirds, Orioles, Sapsuckers and all of the Sparrows joining in the feast. All, except the Sparrows, were frequently badly stained about the head and breast from the purple juice, which also stains the entire alimentary canal.—A. W. ANTHONY, *San Diego, California.*

Taming Chipping Sparrows.—I noticed in the last number of 'The Auk' (Vol. XI, p. 256) a reference to the taming of a Chipping Sparrow (*Spizella socialis*). My father has always had a great fondness for birds and has devoted a great deal of time to ornithology. Some four or five years ago, at my home in Nelson County, Virginia, there were several pairs of Chipping Sparrows building in the rose bushes around the porch along the front of the house. It was the custom of my father upon leaving the breakfast table every morning to put several pieces of bread in his pocket with which he fed the dogs who always were waiting his appearance. He generally threw a few crumbs on the floor of the porch for the Chipping Sparrows and they soon learned to expect his coming. Setting to work in a methodical way he soon had one of the little birds so tame that it would perch on his hand and pick crumbs from his palm, and in a short while it became so familiar as to go to any one of the household in the same way. (I send with this three photographs which show the bird perched on and feeding from the hand of different members of the family.)

In the fall the bird left with the other migrants, but, to our surprise, returned in the spring without any symptoms of shyness, evidently remembering us all. It returned for three successive years, and each time raised two broods of young. Last year it failed to appear, so I suppose has lived out its little life.—WIRT ROBINSON, *1st. Lt. 4th U. S. Art., Washington Barracks, Washington, D. C.*

Note on the Habits of the Northern Shrike (*Lanius borealis*).—On the 9th of March, 1892, at Concord, Mass., I saw a Northern Shrike (*Lanius borealis*) capture, kill and dispose of a meadow mouse. The bird's behavior and methods were so interesting and, in some respects, peculiar that I submit the following account of the episode in nearly the words in which I find it described in my notes written at the time.

As I was watching a Shrike it flew from the topmost spray of a small maple into some alders and alighted on a horizontal stem about a foot above the level of the surrounding snow; but directly beneath, as I afterwards found, the snow had thawed quite down to the ground leaving a trench about two feet deep by three or four inches wide into which the Shrike, after peering intently for a moment, suddenly dropped, with fluttering wings and wide spread tail. Within a second or less it reappeared dragging out a field mouse (*Arvicola riparius*) of the largest size. The moment it got the mouse fairly out on the hard surface of the snow it dropped it, apparently to get a fresh hold (as nearly as I could make out it had held it, up to this time, by about the middle of the back). The mouse, instead of attempting to regain its runway, as I expected it would do, instantly turned on its assailant and with surprising fierceness and agility sprang directly at its head many times in succession, literally driving it backward several feet, although the Shrike faced its attacks with admirable steadiness and coolness, and by a succession of vigorous and well aimed blows prevented the mouse from closing in. At length the mouse seemed to lose heart and turning, tried to escape. This sealed its fate, for at the end of the second leap, it was overtaken by the Shrike who caught it by the back of the neck and began to worry it precisely as a terrier worries a rat, shaking it viciously from side to side, at the same time dragging it about over the snow which, as I could plainly see through my glass (I was standing within ten yards of the spot), was now freely stained with blood. I could also see the Shrike's mandibles work with a vigorous, biting motion, especially when it stopped the shaking to rest for a moment. When it finally let go its hold the mouse was evidently dead. The Shrike now looked up and seeing me jumped on the mouse with both feet and flew off *bearing it in its claws*. Its flight was slow and labored. In fact it did not succeed in rising more than two feet above the snow and went less than two hundred feet before relighting. As I again approached it was tearing at the mouse but it stopped as soon as it saw me and flew some fifty yards further, dropping, this time, into a thicket of alders where it laid the mouse on the snow and resumed its meal. Shortly afterwards it raised the mouse to a branch a few inches above the snow and doubling it over this so that the head hung down on one side, the tail on the other, left it for awhile and alighting above it sat for several minutes nearly motionless. Then it returned to the mouse and taking it by the head dragged it up along the branch until it came to an acute-angled fork a foot or more above the snow. Through this fork it dropped the body;

then, keeping the head above the twigs, it drew the neck firmly into the base of the fork, at the same time stepping backwards and tugging at the head with all its strength, frequently beating its wings vigorously to add to the force of the pull. This task completed to its apparent satisfaction (the entire operation consumed at least three or four minutes), the bird began eating again but in a somewhat listless manner, making long pauses between the mouthfuls. Evidently its appetite was about sated. At length it flew into a neighboring tree where it sat for a long time dressing its feathers — a decidedly necessary attention, for, as I could plainly see through my glass (I now stood within fifteen or twenty feet), its plumage was in sad condition; the feathers of the forehead and throat were matted and soaked with blood, the breast was reddened perceptibly and the bill was almost wholly of a carmine tint. After getting itself into somewhat better trim it flew into some young pines.

I now examined the mouse. The Shrike had not touched any part of the body, but the skin had been torn away from the entire neck, and the muscles and other soft tissues were almost entirely gone from the shoulders and sternum to the base of the skull. The body was untouched and the skull showed no sign of injury, but the cheek muscles had been eaten pretty cleanly away, as had also the entire throat, with the tongue. Both eyes were whole and in their sockets. This examination confirmed the conviction which I formed while watching the Shrike and mouse struggling together, viz., that the bird killed the mouse partly by *throttling*—that is by choking and shaking it—and partly (perhaps chiefly) by cutting its neck open on one side. No attempt was made to stun the mouse by striking at its skull, such blows as I saw delivered being evidently intended to keep the mouse at bay until the Shrike could close with it and get it by the neck.

While I was examining the mouse the Shrike began uttering a mewing cry among the pines. This seemed to be a remonstrance directed at me. I went to the spot and found the bird sitting low down amid dense pine foliage looking rather dumpy and unhappy. About an hour later I returned to the alders and examined the mouse again. As far as I could detect it had not been touched in my absence. I did not see the Shrike again.

The next day at 10 A. M., I visited the alder thicket but the mouse was gone. As there were no tracks in the snow beneath where it had hung I concluded that the Shrike must have returned and removed it.— WILLIAM BREWSTER, *Cambridge, Mass.*

The Carolina Wren in Winter in Mercer County, Pennsylvania.—On Jan. 1, 1891, I shot a male Carolina Wren (*Thryothorus ludovicianus*) and observed another of the same species. For several weeks previously the ground had been covered with snow, which, however, was rapidly melting at this time. The bird was in full song and appeared not at all

incommoded by the weather. So far as I know, this is the farthest north this species has been found in winter, at least in the Eastern States. Mr. Geo. B. Sennett informs me that he has never seen it or heard of its being seen in Crawford County, just north of Mercer, where he lived for a number of years.

This note was published in the 'Ornithologist and Oologist' several years ago, but through a blunder on my part, the name "Bewick's Wren" was substituted for Carolina Wren.—F. LeRoy Homer, *New Hamburg, Mercer Co., Pa.*

The Yellow-breasted Chat in Maine.—In the autumn of 1893,—she believes it was during the month of September,—Mrs. William Senter, of Portland, found upon her lawn the mangled remains of a small bird. It had apparently been mouthed by a cat. Mrs. Senter cut off its head, legs, wings and tail, and preserved them. A few days ago, the relics were shown me. They were those of a Yellow-breasted Chat (*Icteria virens*) in full autumn plumage. Thus is a bird added to the Maine list.—Nathan Clifford Brown, *Portland, Maine.*

Nesting of the Red-bellied Nuthatch in Templeton, Mass.—On the morning of June 10, 1894, while walking through the woods with my nephew on the banks of Otter River in Templeton, and having for an object anything new or interesting, with an especial 'leaning' towards birds' nests, we came to an old stub about fifteen feet high. Following my usual custom in such cases I pounded vigorously to see if any one was "at home." I was surprised to see a Red-bellied Nuthatch (*Sitta canadensis*) fly from the stub and perch on a hemlock limb within six feet of my face and remain there for some minutes, giving me abundant opportunity to positively identify her.

I immediately climbed the stub and found a hole which, had I been as familiar with the breeding habits of the Nuthatch as I have since become, I would have recognized at once as belonging to this species. The lower half of the circumference of the hole was thickly smeared with pitch, which seemed such a strange circumstance that I tore that portion of the wood away whole and passed it carefully down to my nephew and we brought it home. I thought at first that the pitch must have dripped from some wounded limb overhead but there was none there, and the stub was perfectly dry and very much decayed; therefore it must have been brought there by the bird for some purpose doubtless well understood by her, but, so far as I can learn, to no one else.

The hole was about 12 feet from the ground, on the side towards the river (north), and directly over the water where the river widens out into a shallow, weedy lake of perhaps twenty acres in extent. It was about 1½ inches in diameter and 6 inches deep, running down just inside the hard shell of the stub. The nest was simply a handfull of what appears to be fine shreds of inner bark of the dead branch of some tree,

and fine bark from weeds. There was no attempt at weaving, but the depression was apparently shaped by the body of the bird. It was so loosely constructed that I was obliged to carry it home carefully in my hand for fear it would come to pieces. The nest contained three perfectly fresh eggs, agreeing with the description given by various authors of those of this Nuthatch; also *two young birds* apparently two days old and larger than young of the Red-bellied Nuthatch could possibly be at that age. What could the youngsters be? Surely not Nuthatches, and it did not seem possible that a Cowbird could gain access to the nest, even if she were disposed to try. The place and situation of the hole is just where we would expect to find the White-bellied Swallow breeding, and this led me to think that in some way the claims to the hole were somewhat mixed between these two birds.

I immediately wrote to Mr. William Brewster, and at his request sent him one of the young birds, which I had preserved in spirit, for examination. Mr. Brewster writes: "Your youngster is positively not a Cowbird. It differs from my specimen of the latter (two days old) in having a much wider head and gape, a more depressed bill, shorter tibiæ, and in many other essential respects. I have not been able to get at any young Swallows, but your bird looks to me like a young White-bellied Swallow, and I am very sure that is what it will turn out to be."

At Mr. Brewster's suggestion I sent it to Mr. Frederic A. Lucas, who also kindly interested himself in the case, but failing to get a young Swallow for comparison, owing to the lateness of the season when the bird was sent to him, he was unable to positively identify it but expressed himself as very confident that it is a White-bellied Swallow.

It would be interesting to know the exact relations between these two birds. The logical conclusion would seem to be that the Swallow was the first occupant and had succeeded in laying two eggs when she was routed or crowded out by the Nuthatch, who retained possession and unintentionally, perhaps, hatched the eggs of the Swallow while laying her own eggs, and the youngsters, either with or without the aid of their foster-mother, worked their way up through the loose material of the nest. Yet one is left to wonder which parent fed them, or if they were fed at all.—CHARLES E. INGALLS, *East Templeton, Mass.*

Notes from Raleigh, N C.—Ammodramus lecontei. One female taken at Raleigh by me, April 21, 1894, on the edge of a wet meadow. This is the first record for Raleigh, and we believe also for North Carolina.

Ammodramus henslowi. One male taken by me April 21, 1894, within a few yards of where I killed the Leconte's Sparrow; and another April 27, also a male, on the edge of a small stream. These are the second and third records for Raleigh.

Habia ludoviciana. One male taken by me May 4, 1894, at Raleigh.

Empidonax pusillus traillii. One taken Sept. 21, 1893, a male, the third record for Raleigh.

Cistothorus stellaris. A male taken by me Sept. 20, 1893, our second record for Raleigh.

Quiscalus æneus. Two, a male and female, taken Nov. 14, 1893, our second record for Raleigh.

Asio wilsonianus. A male taken Dec. 11, 1893, our second record for Raleigh.

Charitonetta albeola. A female taken Dec. 6, 1893, our first satisfactory record for Raleigh.

Nycticorax violaceus. An immature female taken June 25, 1894, and an immature male July 14, both close to a small stream. These are our first Raleigh records.

Clivicola riparia. A female taken Aug. 8, 1894, our second record for Raleigh.—C. S. BRIMLEY, *Raleigh, N. C.*

Four Additions to the Birds of the Virginias.—Specimens of four species of birds not included in Rives's List are in existence, two of which were taken in Alexandria County, Virginia. Three of the ten specimens are in the National Museum Collection, one in that of my friend, Mr. E. J. Brown, and the others in my own.

Acanthis linaria. REDPOLL.—One specimen, taken by Dr. T. H. Bean at Ft. Runyon, Feb. 19, 1875 (N. M. Coll. No. 68645).

Ammodramus caudacutus nelsoni. NELSON'S SPARROW.—One taken by C. Drexler in September, 1862 (N. M. Coll. No. 25905); another taken by E. J. Brown on Cobb's Island, May 11, 1892 (E. J. B. Coll. No. 228); and a third taken by myself on Four Mile Run Marsh, Sept. 18, 1893 (W. P. Coll. No. 3266).

Dendroica palmarum palmarum. PALM WARBLER.—Probably a regular though rare migrant. I know of five specimens as follows: April 22, 1885, Roslyn (W. P. Coll. No. 1323); Sept. 18, 1887, Potomac Landing (W. P. Coll. No. 1600); April 29, 1888, Roslyn, collected by C. W. Richmond (N. M. Coll. No. 123549); Oct. 4, 1891, Ballston (W. P. Coll. 2833). This specimen has but one leg. Sept. 22, 1893, Four Mile Run, collected by E. J. Brown (W. P. Coll. No. 3281). These in connection with the following specimens, taken in Maryland near Washington, would indicate that the birds occur regularly: May 11, 1881, Soldiers' Home, D. C., collected by L. M. McCormick (N. M. Coll. No. 82477); May 6 and 11, 1889, Laurel, Maryland, collected by R. Ridgway (W. P. Coll. Nos. 2251, 2252); May 11, 1890, Riverside, Maryland, collected by C. W. Richmond (N. M. Coll. No. 123548).

Helminthophaga bachmani. BACHMAN'S WARBLER.—Examining recently the collection of Master P. Henry Aylett, of King William County, Virginia, I found a specimen of this bird. Unfortunately the collector failed to determine the sex and exact date. The specimen is undoubtedly a young male of the year and was collected near Aylett's as above, in August, 1892. This specimen agrees in most particulars with other males of this species, except that the black on the crown is more

restricted, and only visible on parting the feathers; the plumage is also much brighter and fresher than in ten spring males with which it has been compared.

Back dark olive green, upper part of head and neck slate-gray, with a greenish tinge changing to olive-green on the sides of neck and ear-coverts. Forehead, lores and chin lemon-yellow, connected with similar color around eyes and extending along sides of throat to the shoulders. Yellow of forehead obscured by greenish, the lores by black. Throat and forepart of breast dull black. All black feathers tipped with pale greenish yellow, those on the throat being marked as follows. Bases dusky-black, centers pale yellowish, then a band of darker dusky-black tipped with yellowish. Wings and tail as in adults but fresher. Breast lemon-yellow extending down the center nearly to the under tail-coverts, which are yellow at the base, the longer feathers as well as the abdomen being white; sides of breast greenish. Shoulders yellow as in adults, the middle wing-coverts edged with yellowish with dark centers. Three outer tail-feathers with white blotches on inner webs, the fourth showing some white on the edge and the fifth but a trace. Bill black above and near tip of lower mandible, the rest horny; feet dark. As the specimen was moulting the feathers about the throat are scanty and the markings not well defined. The first three primaries are but half grown, they evidently being the last developed of the second flight feathers. When I first saw this specimen a single feather of the nestling plumage remained among the feathers of the head, and I have since found several others on the sides of the neck near the shoulders. They were very pale slate-gray, the one on the head having the margin well worn.—WILLIAM PALMER, *Washington, D. C.*

Irregular Abundance of Birds in the Breeding Season in Different Years at the Same Locality.—Several times of late my attention has been drawn quite forcibly to the fact that birds, or at least some species, are not entirely constant in their choice of a summer home, but vary the location of their breeding places to some extent from year to year. For this reason it does not seem safe to draw conclusions as to the abundance or rarity of a given species at a given place, from the experience of a single summer. As evidence of this, I may note the following discrepancies between my own observations and those of others. But for the fact that the terms 'abundant,' 'common,' 'quite common,' etc., are comparative and may not mean precisely the same to two persons, many more instances of this kind could, perhaps, be noted. In the following cases, however, it seems as if the only possible explanation was irregularity on the part of the birds themselves.

In the 'Atlantic Monthly' for August, 1894, Mr. Frank Bolles writes of the Red-eyed Vireo (*Vireo olivaceus*) in Cape Breton, as "not as numerous as in New Hampshire, but there were enough of them to keep up a running fire of conversation from one end of the island to the other."

This was in the first two weeks of August, 1893. In Dr. Jonathan Dwight, Jr.'s, interesting paper on 'Summer Birds of the Bras d 'Or Region of Cape Breton' (Auk, Vol. IV, p. 13) this species is included in the list, but nothing is said as to its abundance. Dr. Dwight's observations were made in the first half of August, 1886. Now my own experience was very different, for in the nine days from June 4 to 12, 1890, spent in Baddeck and vicinity, including excursions to St. Anne's Bay and Northeast Margaree, I found, as stated in 'The Auk' (Vol. VIII, p. 164), *not a single Red-eyed Vireo*.

Dr. Arthur P. Chadbourne spent the summer of 1887 in Waterville, N. H., and I was there during the last two weeks of June, this year. Dr. Chadbourne has kindly given me a copy of his field list, and on comparing it with mine, I find quite a number of differences. Perhaps the most remarkable are these. In 1887 Dr. Chadbourne found about half a dozen *Colaptes auratus* there. This year I found none, and so familiar and noisy a bird could hardly have escaped my notice, had it been present. On the other hand I found *Ammodramus sandwichensis savanna* tolerably common, *Clivicola riparia* (one sizable colony), and several *Turdus fuscescens*, which I heard singing whenever I walked down the road about sunset; but apparently none of these three species were present in 1887. Moreover, Dr. Chadbourne did not observe *Dendroica maculosa* there until after the middle of July, and those that he then found he took to be migrants, while seven years later I find them common birds in the Waterville Valley and, as it seemed to me, the commonest of the Warblers there. *Vireo olivaceus* was represented in 1887 by only a single pair while in 1894 they were actually *abundant*. The woods were full of them. Dr. Chadbourne found *Dendroica coronata* common on mountain summits, but did not see them on the slopes or in the valley until July 30, whereas I found them in the latter part of June quite common all through this region, though commonest at the higher elevations. *Zonotrichia albicollis* also was apparently present in much greater force this year than in 1887.

The causes of these irregularities are probably many and various, but the facts themselves struck me as interesting and perhaps too readily lost sight of in making generalizations.—Francis H. Allen, *West Roxbury, Mass.*

CORRESPONDENCE.

Parasites of Birds.

To the Editors of 'The Auk':—

Dear Sirs:—An interesting note by Dr. R. W. Shufeldt in the April number of 'The Auk' suggests that other ornithologists might be interested in knowing where to find descriptions and figures of the parasites which occur upon birds. For the group of Mallophaga, which is the principal group of insects infesting birds, there is a very extensive and exhaustive monograph in French by Piaget entitled 'Les Pediculines,' which, with supplement, covers practically everything that is known regarding systematic arrangement and descriptions of these parasites as well as of the suctorial parasites of mammals up to date of publication of the supplement, about seven years ago. A few papers by the same author and by Neumann have appeared since then and the writer has given a short account of the species affecting domestic animals, also describing some American species, in Bulletin Number 7, of the Division of Entomology, United States Department of Agriculture.

Of the earlier works on these parasites those of Nitzsch and Denny are important, the latter being in English and covering the species known to occur in Great Britain. This was published in 1842 and is, of course, deficient in regard to the recently described species. Another work, the 'Epizoa,' by Geibel, in German, contains full accounts of the species known up to 1872, with colored plates for a large proportion of them, and is quite serviceable for the study of these parasites. The work by Piaget, however, is most essential.

In regard to photographing these insects it has been my experience that it is a difficult matter to get photographs which give distinct details of the minute parts, some of which are particularly necessary for the discrimination of the species, although the photographs will give a general outline and certain portions very distinctly. If the photograph is made with transmitted light certain portions, especially where the tissues are denser, will appear obscure, and most surface characters are lacking, and with reflected light it is impossible to get photographs from specimens in balsam, and if taken from unmounted specimens there is much difficulty in getting the parts all into focus so as to secure a distinct outline as well as clear details of the surface markings. These parasites can be studied very nicely with a compound microscope with powers ranging from 50 diameters to 200 diameters, and if the specimens can be examined while alive some of the structures otherwise obscure are likely to be discovered. In preserving them it is well to put a number in alcohol in small vials with note giving name of host, and if the material

is abundant, to preserve some at once by mounting in Canada balsam upon glass slides for microscopic study. Suggestions in this line have been made in a recent article in the 'American Monthly Microscopical Journal.'

Very respectfully,

HERBERT OSBORN.

Agricultural College, Ames, Iowa.

Notes on the Steganopodes, and on Fossil Birds' Eggs.

TO THE EDITORS OF 'THE AUK':—

Dear Sirs:—Through the courtesy of the United States National Museum I have been permitted to examine their entire series of skeletons representing all the North American representatives of the Steganopodes. This material I have also compared with osteological preparations of steganopodous birds in my own collection, and with those from other parts of the world. My comparative studies of this remarkably fine series convinces me that this group, in so far as their skeletology seems to indicate, may be arrayed as a fairly natural SUBORDER of birds, for which the name STEGANOPODES may be retained. Upon again dividing them they would appear to fall into at least three superfamilies, and an entire taxonomical scheme, to include so far as the genera only, would stand as follows:—

SUBORDER.	SUPERFAMILIES.	FAMILIES.	GENERA.
STEGANOPODES	Pelecanoidea	Pelecanidæ.	*Pelecanus.*
		Phalacrocoracidæ.	*Phalacrocorax.*
		Anhingidæ.	*Anhinga.*
		Sulidæ.	*Sula.*
	Phaëthontoidea	Phaëthontidæ.	*Phaëthon.*
	Fregatoidea.	Fregatidæ.	*Fregata.*

In the 'Proceedings' of the Zoölogical Society of London for this year (1894, p. 160) I published a brief article 'On the Affinites of the Steganopodes,' wherein there was set forth a classificatory scheme for this group, but unfortunately it contained an error that made it appear that the genera *Pelecanus*, *Phalacrocorax*, *Anhinga*, and *Sula* all belonged to the family *Pelecanidæ*, which of course is a proposition that would not be entertained for a moment by any thinking avian taxonomer. There are no better defined families anywhere in ornithology than the Pelicans, the Comorants, the Anhingas, and the Gannets. Of the Pelecanoidea, the two most closely related families are the Phalacrocoracidæ and the Anhingidæ, while the next most evident fact is the less close affinity existing between the Comorants and the Sulidæ. *Pelecanus* is an aberrant genus having varying relations with all the other three remaining families of the Pelecanoidea. From this last-named superfamily we are led to the Phaëthontoidea through the Sulidæ, and especially through

the great similarity of a number of the skeletal characters as seen in *Sula brewsteri* as compared with the corresponding ones of the genus *Phaëthon*.

Again, in some osteological particulars *Phaëthon* links the Steganopodes with the Longipennes on the one hand, and with the Tubinares on the other. There are many suggestive "gull characters" in the skeleton of *Phaëthon flavirostris*, and even more that suggest to us the skeleton as seen in *Puffinus*.

Of the three superfamilies given in my scheme above, the most unique and best defined one is the Fregatoidea. The pelvis in *Fregata* is more like the pelvis in *Phaëthon* than it is like that bone in any of the other steganopodous types, but the strangest fact is the very close resemblance, both superficial and real, its skull has to the skull of a typical Albatross,—as for example that of *Diomedea albatrus*. In my P. Z. S. article I pointed out a number of these characters, but in another account not as yet published, I have written out a very full comparative description of the skeleton of *Fregata* which will appear in due course.

Passing now to another matter I would invite your attention to another paper recently published by the present writer, and I refer to my 'Comparative Oölogy of North American Birds' which appeared in the Report of the U. S. National Museum for 1892. On page 461 of that memoir I remark that I am "not aware of the discovery of the eggs of any of the now extinct forms of reptiles, either fossil or subfossil, and it is beyond all probability that we will ever know what the eggs of *Archæopteryx*, or any of the toothed birds of the Kansas Cretaceous Beds (*Hesperornis*, *Ichthyornis*, and others), or, indeed, any of the smaller extinct types of Aves, looked like." This opinion I believe to be quite general, or at least it is by no means a well-known fact that specimens of fossil eggs of both reptiles and birds have been found and now exist in certain collections. I was among the number standing in ignorance of that fact when I published my above-named memoir, but since then, through the kindness of Mr. F. A. Lucas of the U. S. National Museum, I have been shown in the palæontological collections of that institution, very perfect specimens of thoroughly fossilized eggs of a small turtle, probably an *Emys*, also fairly good specimens of fossilized birds' eggs (*Larus*, or of some allied type?).

All these specimens are from the Paris Basin, and were received from the distinguished French savant, M. Alphonse Milne-Edwards. The birds' eggs, which interest us here, consist of a subfossilized, more or less broken shell, of a dull gray color, which closely overlays the solid fossil infiltrated matter that fills up in each case the egg cavity. Those I examined show no evidence of markings of any kind on the surface of the shell, which is no more than what we would expect. With such specimens as these before me, I can now easily believe that it lays quite within the range of possibility for us some day to find in the Kansas Cretaceous Beds fossilized eggs of the extinct toothed birds above named.

Indeed, that cretaceous formation, it would seem to me, would afford the very best conditions for the preservation of such objects.

Captain Bendire has shown me a very beautiful specimen of a fossil egg of a turtle (*Emys*) that he personally collected. It is from the Cretaceous, and the fossilized remains of the turtle were found with it. He also showed me a fine fossil bird's egg, probably a *Sula*, found 42 ft. below the surface of a guano deposit on the Island of Lobos de Tierria, coast of Peru, and which has been estimated by the Peruvian scientists to be a thousand years old.

I reiterate my belief here that it is very likely that the eggs of all the early ancestral types of birds were plain white and without markings of any kind. When I say this I do not mean to include of course the more immediate ancestral types of modern birds, though it is probable that many of them laid pure white eggs, but rather those avian or reptilo-avian forms belonging to still earlier geologic periods, as for example such a horizon as the one in which *Hesperornis* and its contemporaries are found, or perhaps even still a little later, as those of the early part of the Tertiary age.

Very respectfully,

R. W. Shufeldt.

Takoma, D. C.,
25 July, 1894.

NOTES AND NEWS.

The Twelfth Congress of the American Ornithologists' Union will be held at the American Museum of Natural History in New York City, beginning Monday, Nov. 12, 1894, with the meeting of the Council and the business meeting for the election of officers and members and the transaction of the usual routine business. Tuesday and following days will be given to public sessions for the reading and discussion of scientific papers. Members intending to present papers are requested to forward the titles of their papers to the Secretary, Mr. John H. Sage, Portland, Conn., prior to Nov. 7, in order to facilitate the preparation of the program of papers to be read before the Congress.

Mr. Samuel N. Rhoads of Haddonfield, New Jersey, has just published his 'Reprint of the North American Zoölogy, by George Ord,' announced some months since (see Auk, XI, p. 190) as in preparation. It forms an octavo volume of nearly 200 pages, relating about equally to mammals and birds. The work comes too late for formal review in the present number of 'The Auk.'

MR. GEORGE K. CHERRIE, for the last six years connected with the Museo Nacional at San José, Costa Rica, has recently resigned from the service of the Costa Rican government and returned to the United States. Almost immediately upon his arrival in New York he was offered and accepted the position of assistant in the Department of Ornithology at the Field Columbian Museum in Chicago, of which Mr. C. B. Cory has recently been made Curator (see Auk, XI, p. 264).

Mr. Cherrie has made an enviable record for himself in Costa Rica, displaying an energy and a capacity for work rarely equalled. He entered the employ of the Costa Rica government as its taxidermist. Soon, however, the authorities of the Museum, recognizing his industry and abilities, placed him in sole charge of the department of zoölogy. His interest in ornithology led him into the field as a collector and explorer, with the result of bringing together a collection of some 12,000 bird skins, besides many nests and eggs and several hundred specimens of mammals. His explorations covered nearly the whole of the Costa Rican Republic, but the region immediately about San José, the Volcano of Irazù, and the southwest coast region were the areas receiving special attention. These explorations added between fifty and sixty species to the list of Costa Rican birds, about twenty of which were new to science. He has published some of the results of his ornithological work in various preliminary papers (see Auk, Vols. VII–X, and Proc. U. S. Nat. Mus., Vols. XIV–XVI), and various new species of mammals have been described from his material. Recent political changes in the country rendered the further prosecution of his work temporarily impracticable, but he has by no means given up hope of again resuming it at some more favorable time, and of publishing in detail the important facts he has gathered regarding the geographical distribution of the birds of Costa Rica, and the several well-marked life-areas into which the Republic is separable.

DR. EDGAR A. MEARNS, U. S. A., was detailed nearly three years since to accompany, as surgeon and naturalist, the International Boundary Commission appointed to relocate and mark the boundary line between Mexico and the United States. The Commission started from El Paso, Texas, in March, 1892, and reached the Pacific Coast early in July, 1894. Dr. Mearns has thus had somewhat over two years in the field, traversing a line nearly one thousand miles in extent, across portions of country so arid that it was necessary to transport water for long distances for the use of the expedition. Opportunity was thus afforded for collecting at points ordinarily inaccessible to naturalists, and from which specimens will not often be obtainable in the future. With the aid of one regular assistant and more or less casual help from other sources, Dr. Mearns has brought together immense collections in various departments of natural history, but particularly in mammalogy, ornithology, ethnology and botany. It is therefore very gratifying to learn that he has been assigned to duty at Fort Myers, in the immediate vicinity of Washington, and hence within easy access to the libraries and collections of the U. S. National Museum

and Smithsonian Institution. This will give him all needed facilities for working up his large collections, which will doubtless be made the basis of elaborate reports upon the natural history of the region traversed by the Boundary Commission.

On July 7, 1894, the steamship 'Miranda' sailed from New York for Greenland, having on board a large party of scientists and pleasure seekers, under the leadership of Dr. F. A. Cook, surgeon and ethnologist of the first Peary Expedition. It was the intention to visit Newfoundland and the Labrador coast and then proceed, if possible, as far northward as the Peary headquarters at McCormick Bay.

But a series of mishaps befel the vessel, ending in her loss by striking a rock off West Greenland. The excursionists, as well as the ship's crew, were safely transferred to the fishing schooner 'Rigel,' and after many discomforts safely reached New York. But everything in the way of outfit and supplies, together with large collections in various departments of natural history, and about 1000 photographs, went down with the ill-fated steamer. Among the naturalists of the party were L. L. Dyche, Professor of Zoölogy in the University of Kansas; E. A. McIlhenny of Louisiana, and H. Travis of the American Museum of Natural History. Special attention had been given by them to birds and mammals, their combined collections numbering nearly 1000 specimens, forming one of the most important single collections ever made in Greenland. A special feature of the collection was a large series of the young, in various stages of growth, of the various species of both land and water birds met with. Had the expedition not been thus brought to an untimely close, the results would have been of great importance for ornithology. Although the naturalists of the party saved their note-books, the loss of the specimens is greatly to be deplored.

It gives us pleasure to announce that Mr. D. G. Elliot, the well-known ornithologist and mammalogist, has been added to the scientific staff of the Field Columbian Museum of Chicago, he having recently been appointed Director of the Department of Zoölogy, and will soon enter upon the duties of his office.

Mr. C. A. Babcock, Superintendent of Schools at Oil City, Penn., "has recently established a 'Bird Day' in the schools under his supervision. The literary exercises of the occasion are similar to those that have characterized the observance of 'Arbor Day' for the last decade, the object being the preservation of American birds from the women who wear them and from the small boy." From Mr. Babcock himself we learn that the pupils of his schools study birds throughout the year, making original observations which become the subjects of compositions or of 'talks' in the schools. Bird Day is merely the occasion for gathering together the work of the year, with the addition of such statements from books as can be made in the allotted time. "The peculiarity of our Nature Study," he adds, "is that it consists of actual observation by the

pupil, and not in learning from books." Well would it be if the example here set could be followed generally by the schools throughout the country. Aside from the advantage to the pupil of the knowledge gained, no better bird protection could be devised.

THE fashion journals just at the present time are not altogether pleasant reading to bird lovers or to persons of refined or humane instincts; for it is too evident that the absurd craze for hat decorations composed of bird skins, either entire or in endless degrees of mutilation and disfigurement, is again rampant. Thus a no less respectable fashion journal than 'Harper's Bazar,' in its issue of Aug. 18 last, in an article devoted to 'New Hats and Bonnets,' gives the following delectable information to its readers, without a word of protest or lament, under the subheading 'Birds and Wings.' ". . . . Blackbirds prevail, and are poised in pairs, with beaks meeting lovingly, their wings and tails pointing straight to give the shape of a large bow, and often resting on a still larger bow of Liberty satin ribbon of many loops. This happy arrangement is on the front of small bonnets, while large hats have a second pair [of birds] across the back, resting on loops or *choux* of ribbon below the upturned brim. Single birds perch on the front edge of the brim of round hats, or nestle in the large ruche that surrounds the crown — the nestling or brooding bird is not considered so effective as the newly lighted bird with wings still in the air. The dear little blackbirds have been touched with color by French milliners, who hesitate at nothing. They are given throat or breast of bluet blue, aubergine, or emerald green, and their raven wings are also covered on one side with these colors. Small bluebirds and others of pale yellow or pink are *givré* with jet along their slender wings and pointed beaks. Large *choux* made of feathers or stiff quills *poudré* with jet are effective trimmings"!

Other fashion journals not only give similar instructions to their patrons, but illustrate these wonderful effects with appropriate figures.

On the other hand, it is refreshing to find evidence in 'The Fashions' column of some of our metropolitan newspapers that not all women are devoid of sense and feeling in millinery matters. Thus in the New York 'Evening Post' of recent date we find the following: "The fact is to be regretfully recorded that there is to be a rage for bird garnitures in millinery. Birds in groups or singly, and often their heads, wings, and breasts separately, form a decided feature of the season's very gay millinery. . . . Blackbirds, canaries, seagulls, swallows, and birds grotesquely dyed in various brilliant hues are seen on bonnets which look smaller than the decoration, so large are some of the victims to the brutal and perverted taste."

Evidently there is still hard work ahead for the A. O. U. Committee on Bird Protection, for the Audubon Societies, and for the Prevention of Cruelty to Animals Societies, to meet this renewed attack upon bird life in the interest of the milliners' demand for 'bird garniture.' But more still can be done by the sensible women of the country individually, by not only refusing to wear such badges of barbarism, but by decrying the fashion as brutal and vulgar.

INDEX TO VOLUME XI.

ABRORNIS, 233.
Acanthis linaria, 333.
Acanthorhynchus tenuirostris, 142, 144.
Accipiter, 233.
  atricapillus, 267, 302.
  cooperi, 136, 251, 252, 267.
  pallens 170.
  velox, 136, 251, 267, 302.
Acridotheres, 233.
Acrocephalus, 233.
Actenoides, 234.
Actitis macularia, 123, 136. 302.
Ægialitis vocifera, 302.
  wilsonia, 123.
Ægithina, 233, 234.
Aëronautes melanoleucus, 186.
Æstrelata brevipes, 170.
  hasitata, 162, 241.
  hypoleuca, 170.
  jamaicensis, 119.
  leucoptera, 170.
  longirostris, 170.
Æthopyga, 235.
Agelaius phœniceus, 138.
Aimophila mcleodi, 67.
  rufescens, 44.
  rufescens pallida, 43.
  superciliosa, 66.
Aithurus polytmus, 125, 126.
Aix sponsa, 135.
Albatross, Wandering, 282.
Alcedo, 233.
Allen, Charles Slover, M. D., obituary of, 86.
Allen, Francis H., irregular abundance of birds in the breeding season in different years at the same locality, 334.
Allen, J. A., notice of his paper on Venezuelan Birds, 66; notice of his 'List of Birds collected in Northeastern Sonora and Northwestern Chihuahua,' 66. Ovenbird (*Seiurus aurocapillus*), 91.
American Ornithologists' Union Check-list of North American birds, sixth supplement to the, 46; eleventh congress of the, 51.
Ammodramus caudacutus, 139.
  caudacutus nelsoni, 333.
  henslowii, 139, 332.
  leconteii, 256, 332.
  maritimus, 139, 259.
  maritimus peninsulæ, 80.
  sandwichensis, 66.
  sandwichensis alaudinus, 305.
  sandwichensis savanna, 335.
  savannarum passerinus, 139.
  savannarum perpallidus, 305.
Ampelis cedrorum, 139, 307.
Amphispiza belli, 219.
  bilineata, 218.
Anas boschas, 301.
  carolinensis, 301.
  labradoria, 5.
  labradorica, 176.
Anous stolidus, 120.
Anthony, A. W., notice of his Birds of San Pedro Martir, Lower California, 167; notes on the genus *Heleodytes*, with a description of a new subspecies, 210; *Oceanodroma townsendi* off San Diego, California. 321; *Icterus parisorum* in western San Diego County, California, 327.
Anthothreptes, 235.
Anthracoceros, 233.
Anthus, 233.
  pensilvanicus, 80, 222, 307.
  spragueii, 80, 181.
Antrostomus rufomaculatus, 169.
  saturatus, 169.
  vociferus, 137, 253.
  vociferus arizonæ, 48.
  vociferus macromystax, 48.
Apgar, Austin C., notice of his 'Pocket Key of Birds,' 65.

Aphelocoma cyanotis, 154, 327.
floridana, 244.
sieberii arizonæ, 220.
woodhousei, 268.
Aplopelia larvata, 61.
Aptenodytes longirostris, 280.
Aquila chrysaëtos, 69, 77, 267, 303.
Arachnothera, 235.
Aramides cayanea, 243.
cayanea chiricote, 243.
gutturalis, 243.
Aramus giganteus, 122.
Arbelorhina cærulea, 143.
cyanea, 143.
Ardea cærulea, 121.
candidissima, 121, 183.
egretta, 121.
herodias, 121, 122, 135, 302.
tricolor ruficollis, 121.
virescens, 121, 122, 136.
Ardetta exilis, 121, 122, 163.
Arenaria interpres, 226.
Argly, 12.
Artamides, 234.
Artamus, 233.
Asio accipitrinus, 71, 136.
wilsonianus, 333.
Astur, 236.
Audubon, John James, portrait and letter of, 309.
Audubon, Miss M. R., see Shufeldt, R. W.
Auk, Great, 191.
Auriparus flaviceps, 219.
Avery, Dr. William Cushman, obituary notice of, 190, 263.
Aythya affinis, 225.
marila nearctica, 225.

Bagg, Egbert, birds of Oneida County, New York, 162.
Bald-head, 304.
Bald-pate, 123.
Banana-bird, 126.
Bangs, Outram, another record of the breeding of the Saw-whet Owl in eastern Mass., 77; distribution of the Hudsonian Chickadee, 81.
Basileuterus rufifrons, 67.
rufifrons jouyi, 245.
Basilinna leucotis, 325.
Batrachostomus, 233, 234.
Bee-bird, 237.
Bendire, Charles E., *Tympanuchus americanus attwateri*, Attwater's or Southern Prairie Hen, 130.
Bird, Cashew, 127.
Cedar, 139.
Frigate, 85.
Indigo, 139.
Man-o'-War, 120.
Tortoise-shell, 121.
Bird Protection, A. O. U. Committee on, 87.
Bishop, Louis B., Black Tern (*Hydrochelidon nigra surinamensis*) in Connecticut, 74; Whistling Swan (*Olor columbianus*) in Connecticut, 74; *Helminthophila leucobronchialis*, 79; remarks on the nest of *Cistothorus palustris*, 80.
Bittern, 163.
American, 302.
Black-back, 127.
Blackbird, 124, 215.
Brewer's, 220, 221, 305.
Red-winged, 102, 138.
Yellow-headed, 221.
Bluebird, 140, 151, 215, 257.
Mountain, 216, 217, 270, 308.
San Pedro, 159.
Western, 270.
Bobolink, 26, 27, 29, 32, 70, 102, 179, 180, 255, 305.
Bobwhite, 136.
Cuban, 324.
Florida, 324.
Bolles, Frank, obituary notice of, 184.
Bonasa umbellus, 67, 68, 69, 136, 302.
umbellus togata, 70.
Bond, Frank, the Mockingbird in Wyoming, 258.
Botaurus exilis, 183.
lentiginosus, 70, 302.
Brant, 224, 225.
Branta bernicla, 224.
canadensis, 70, 84, 226, 302.
nigricans, 163.
Brasher, Reginald I., Northern Phalaropes off the New Hampshire coast, 250.
Brewster, William, notes and song-flight of the Woodcock (*Philohela minor*), 291; breeding of the Prairie Horned Lark (*Otocoris alpestris praticola*) near Pittsfield, Mass., 326; note on the habits of the Northern Shrike, 329.
Brimley, C. S., notes from Raleigh, N. C., 332.

Broderipus, 234.
Brown, Edward J., the Black Tern at Washington, 73; *Dendroica striata* in summer at Washington, D. C., 79; bird notes from Virginia, 259.
Brown, Nathan Clifford, the Yellow-breasted Chat in Maine, 333.
Bubo, 233.
virginianus, 136.
virginianus subarcticus, 268.
Buceros, 234.
Buchanga, 233, 234.
Bull-finch, Black, 126.
Bunting, Chestnut-collared, 217.
Indigo, 32.
Lark, 219.
Lazuli, 306.
Buphagus skua antarcticus, 282.
Bush-Tit, Lead-colored, 218, 270.
Butaster, 233.
Buteo albicaudatus, 48.
albicaudatus sennetti, 48.
borealis, 136, 267, 302.
borealis calurus, 267.
latissimus, 136.
lineatus, 197, 270.
swainsoni, 267, 302.
Buthraupis cæruleigularis, 169.
Buzzard, Turkey, 250.

Cacabis chucor, 70.
Cacatua, 233.
Cacomantis, 233.
Calamospiza melanocorys, 219.
Calcarius lapponicus, 180, 249.
ornatus, 217.
Calidris arenaria, 122, 183, 225.
Callipepla elegans, 66.
elegans bensoni, 66.
gambeli, 68, 128.
squamata, 221.
Calœnas, 233.
Calornis, 233.
Campbird, 304.
Campephilus imperialis, 66.
Camprobber, 304.
Camptolaimus labradorius, 4–12, 176.
Campylorhynchus, 48.
Capercailzie, 70, 71.
Caprimulgus, 234.
macromystax, 48.
vociferus macromystax, 48.
Cardinal, 101, 139, 222.
Cardinalis cardinalis, 139.
Carpodacus cassini, 269.
Carpodacus frontalis, 255, 260.
purpureus, 1, 182.
Carpophaga, 233.
ænea, 239.
Cashew-bird, 127.
Catbird, 140, 307.
Cathartes aura, 124, 136, 267, 302.
Catharus melpomene clarus, 245.
Cedar-bird, 139.
Centrocercus urophasianus, 302.
Centrococcyx, 234.
Centurus radiolatus, 124.
Ceophlœus pileatus, 137.
Certhia familiaris, 244.
familiaris montana, 270, 307.
Certhiola, 143.
Ceryle alcyon, 136, 220, 303.
torquata, 177.
Ceyx, 236.
argentata, 237.
cyanopectus, 237.
melanura, 237.
Chætura, 233.
pelagica, 137.
Chalcococcyx, 233.
Chalcophaps, 233.
Chalcostetha, 233.
Chapman, Frank M., remarks on the origin of bird migration, 12; notice of his 'Notes on Birds and Mammals observed near Trinidad, Cuba,' 67; notice of his second trip to the Island of Trinidad, 90; ornithological lectures at the Museum of Natural History, 90; notice of his 'Birds of the Island of Trinidad,' 173.
Charadrius dominicus, 75.
squatarola, 123, 183, 225.
Charitonetta albeola, 84, 333.
Chat, Yellow-breasted, 70, 140, 331.
'Check-List of North American Birds,' proposed new edition of, 87.
Chelidon erythrogastra, 139, 222, 306.
Cherrie, Geo. K., notice of his 'Exploraciones zoologicas efectuadas en la parte meridional de Costa Rica,' 245.
Chickadee, Carolina, 134, 135, 140.
Columbian, 47.
Hudsonian, 81.
Mountain, 270, 308.
Plumbeous, 261.
Long-tailed, 270, 308.
Chicken, Prairie, 68.
Chim-chim, 127.

Chionis minor, 282.
Chloropsis, 234.
Chondestes grammacus strigatus, 222, 306.
Chordeiles acutipennis texensis, 51.
minor, 125.
texensis, 51.
virginianus, 137.
virginianus henryi, 268, 303.
Chrysococcyx, 233.
Chrysocolaptes, 234.
xanthocephalus, 239.
Chrysotis canifrons, 174.
Cinclus mexicanus, 69, 258, 269, 307.
Cinnyris, 236.
Circus hudsonius, 136, 267, 302.
Cisticola, 238.
cisticola, 238.
exilis, 238.
Cistothorus griseus, 47.
palustris, 80, 140.
stellaris, 333.
Cittocincla, 235.
Clark, Hubert Lyman, high plumage in the Ptarmigan, 177.
Climacteris, 233.
Clivicola riparia, 306, 333, 335.
Coale, Henry K., ornithological notes on a flying trip through Kansas, New Mexico, Arizona and Texas, 215.
Coccothraustes vespertinus montanus, 269.
Coccyzus americanus, 70, 124, 136.
erythrophthalmus, 69, 183.
minor, 124.
Cockatoo, 239.
Cocoa-bird, 126.
Cœligena clemenciæ, 327.
Cœreba cœrulea, 142, 144.
cyanea, 142, 144.
flaveola, 119, 127.
Colaptes auratus, 137, 334.
cafer, 268, 303.
Colinus virginianus, 68, 69, 123, 129, 136.
virginianus cubanus, 324.
virginianus floridanus, 324.
Collocalia, 236.
Columba erythrothorax, 61.
fasciata, 267.
leucocephala, 123.
taczanowskii, 170.
Columbigallina passerina, 47, 123.
passerina terrestris, 47, 48.
Colymbus dominiçensis, 119.
Compsothlypis americana, 14, 139.
Congress on Ornithology, in Chicago, 89.
Contopus borealis, 268, 304.
richardsonii, 268, 304.
virens, 137.
Conuropsis, 49.
carolinensis, 49.
Conurus, 49.
carolinensis, 49.
Cooke, W. W., ten new birds for Colorado, 182.
Cooper Ornithological Club, 89.
Coot, American, 84.
Bald-head, 122.
Red-head, 122.
White-head, 122.
Copsychus, 233.
Corethura, 317.
elegans, 243.
reichenovi, 243.
Cormorant, Brandt's, 97.
Common, 21.
Double-crested, 18–25, 175.
Corone, 233.
Corvus, 235
americanus, 138, 305.
americanus caurinus, 50.
caurinus, 50.
corax, 244.
corax principalis, 137, 138.
corax sinuatus, 138, 269.
ossifragus, 138.
Coturnicops, 242, 317.
Cowbird, 138, 305.
Cox, Ulysses O., description of a new species of *Pipilo* from Mount Orizaba, Mexico, 161.
Crab-catcher, 121.
Crake, 173.
Crane, 121.
Little Brown, 183, 248, 324.
Sandhill, 68, 248, 324.
Whooping, 242, 248.
Craniorrhinus, 234.
Creciscus, 242.
Creeper, Brown, 38.
Rocky Mountain, 270, 307.
Crossbill, American, 38.
American Red, 305.
Red, 182.
White-winged, 108.
Crotophaga ani, 124.
Crow, 69, 138, 228, 231.
American, 305.
Clarke's, 269, 327.
Fish, 138.

Crow, John, 124.
Crymophilus fulicarius, 74, 181, 225, 227.
Cryptolopha, 233.
Cuckoo, 70, 234.
Asiatic, 335.
Black-billed, 69, 183.
Ground, 164.
Yellow-billed, 136.
Cuculus canorus telephonus, 335.
Culicicapa, 233.
Cupidonia cupido, 68.
Curlew, Eskimo, 75, 76.
Long-billed, 302.
Curtis, Charles P., Jr., the Double-crested Cormorant, 175.
Cyanocephalus cyanocephalus, 260, 269.
Cyanocitta cristata, 137.
cristata florincola, 70.
stelleri macrolopha, 217, 268.
stelleri annectens, 304.
Cyanomyas, 236.
Cyclopsitta, 234.
Cypselus phœnicobius, 125.

Dafila acuta, 84.
Dapper, Diving, 119.
Dasycrotopha, 233, 234.
Dasylophus, 233, 234.
Davis, William F., Staten Island Crows and their roosts, 228.
Delaware Valley Ornithological Club, 191.
Dendragapus obscurus, 267, 302.
Dendrobiastes, 233.
Dendrœca carbonata, 244.
Dendroica æstiva, 140, 307.
æstiva sonorana, 218.
auduboni, 218, 269, 307.
cærulea, 163.
cærulescens, 182, 183, 260.
coronata, 335.
discolor, 140.
kirtlandi, 258.
maculosa, 142, 144, 335.
palmarum, 181.
palmarum palmarum, 333.
pensylvanica, 182.
petechia, 127.
petechia flaviceps, 67.
petechia gundlachi, 67.
striata, 79.
tigrina, 140, 142, 143, 144.
townsendi, 269.
vigorsii, 14, 15, 140.
Dicæum, 236.
Dickcissel, 34, 35, 126.
Dicrurus, 234.
Diomedea exulans, 282.
Dionne, C. E., an abundance of Murres in the environs of Quebec, 175.
Dipper, American, 269, 307.
Dolichonyx oryzivorus, 180, 305.
oryzivorus albinucha, 48.
Dove, Ground, 123.
Mourning, 136, 220, 267, 302.
Pea, 123.
Dryobates borealis, 137.
pubescens, 137.
pubescens oreœcus, 268, 303.
scalaris lucasanus, 178.
villosus, 136.
villosus hyloscopus, 268, 303.
Dryococcyx, 233, 234.
Duck, Blue Mountain, 119.
Buffle-head, 84.
Labrador, 4–12, 175.
Long-tailed 12.
Pied, 6.
Pin-tail, 84.
Shoveller, 84.
Wood, 135.
Dutcher, William, the Labrador Duck—another specimen, with additional data respecting extant specimens, 4; in re Dutcher on the Labrador Duck, 175; the Labrador Duck, an overlooked specimen and record, 176.

Eagle, Bald, 69, 136.
Golden, 69, 77, 267, 303.
Ectopistes migratorius, 70.
Edoliisoma, 234.
Edson, John W., the Parasitic Jaeger at Bellingham Bay, Washington, 73.
Eider, American, 223, 226.
King, 103, 223.
Elainea cotta, 126.
Elanus, 233.
Elliot, D. G., notice of his Monograph of the Pittidæ, Part I, 62; Part II, 173; Part III, 243.
Emberiza ciopsis ijimæ, 170.
Empidonax acadicus, 82, 137, 259.
flaviventris, 78, 82.
hammondi, 304.
minimus, 304.
obscurus, 268.
pusillus, 66.
pusillus trailli, 327. 332

Empidonax wrightii, 304.
Engyptila, 61.
albifrons, 50, 61.
jamaicensis, 123.
Ereunetes occidentalis, 325.
pusillus, 325.
Erythropsitta, 234.
Eucichla guaiana, 243.
gurneyi, 62.
schwaneri, 62.
Eudynamis, 234.
Euetheia bicolor, 126.
Eugenes fulgens, 326.
Eumyas, 233.
Euphonia jamaica, 127.
Euptilotis neoxenus, 66.
Eurystomus, 233.
Euryzona, 317.
Excalfactoria, 233.

FALCO, 234.
columbarius, 246, 267.
mexicanus, 267.
richardsonii, 267, 302.
sparverius, 136, 268, 303.
Falcon, Prairie, 267.
Fannin, John, the Canada Goose and Osprey laying in the same nest, 322.
Field, George W., notes on birds of Port Henderson, Jamaica, West Indies, 117.
Finch, California House, 255.
Cassin's Purple, 269.
Crimson-fronted House, 218.
House, 216, 220, 260.
Lark, 222.
Lincoln's, 218.
Pine, 269.
Purple, 1, 38.
Fisher, A. K., the capture of *Basilinna leucotis* in southern Arizona, 325; occurrence of *Aphelocoma cyanotis* in western Texas, 327.
Flicker, 103, 137.
Red-shafted, 268, 303.
Flycatcher, Acadian, 82, 137, 259.
Crested, 137.
Hammond's, 304.
Least, 257, 304.
Olive-sided, 268, 304.
Traill's, 66.
Vermilion, 218, 220.
Wright's, 268, 304.
Yellow-bellied, 78, 82, 110.
Formicarius analis, 170.
Formicarius nigricapillus, 170.
nigrifrons glaucopectus, 170.
Fregata aquila, 77, 85, 120.
Fulica americana, 84, 122.
Fuligula labradorica, 176.

GALEOSCOPTES carolinensis, 140, 307.
Gallinago delicata, 301.
Gallinula galeata, 122, 163, 242.
garmani, 242.
sandwichensis, 242.
Gallinule, Purple, 242.
Gallus, 233.
Ganlin, Blue, 121.
White, 121.
Garefowl, 191.
Garman, H., notice of his list of the vertebrate animals of Kentucky, 244.
Gault, B. T., Kirtland's Warbler in northeastern Illinois, 258.
Gelochelidon nilotica, 259.
Geocichla, 233.
Geococcyx californianus, 268.
Geopelia, 233.
Geothlypis, 174.
macgillivrayi, 269, 307.
trichas, 140.
trichas melanops, 67.
trichas occidentalis, 307.
Geotrygon mystacea, 246.
Gie-me-a-bit, 125.
Glaucidium cobanense, 43.
fisheri, 41, 43.
gnoma, 268.
Glaucionetta, 176.
clangula americana, 226.
Glossoptila campestris, 144.
Gnatcatcher, Blue-gray, 109, 140.
Golden-eye, 176, 226, 260.
Goldfinch, 139, 215.
American, 305.
Arizona, 218.
Goose, Canada, 84, 102, 215, 226, 302, 322.
Goshawk, American, 267, 302.
Grackle, Bronzed, 244.
Purple, 138, 244.
Rusty, 248.
Gracula, 233.
Grass-bird, 126.
Grass-quit, 126.
Grosbeak, Black-headed, 269, 306.
Blue, 34, 109.
Cardinal, 215.
Evening, 1, 106, 108, 248.

Grosbeak, Pine, 1, 69, 70, 108, 305.
Rose-breasted, 27, 29.
Western Evening, 108, 269.
Grouse, Dusky, 267, 302.
Prairie Sharp-tailed, 302.
Red, 174.
Ruffed, 69, 71, 136, 302.
Sage, 302.
Grus canadensis, 183, 324.
lilfordi, 243.
mexicana, 324.
Guara alba, 121.
rubra, 121, 324.
Guillemot, Pigeon, 96.
Gull, American Herring, 73, 84.
Bonaparte's, 182.
Heermann's, 95, 97.
Herring, 215.
Western, 95, 97, 301.

HABIA ludoviciana, 332.
melanocephala, 269, 306.
Halcyon, 236.
chloris, 237.
coromanda, 237.
gularis, 237.
Haliæetus, 233.
leucocephalus, 136.
Haliaster, 233.
Hapalocercus fulviceps, 66.
Harpactes, 233.
Harporhynchus palmeri, 219.
rufus, 69, 140.
Hawk, Broad-winged, 136.
Cooper's, 136, 208, 251, 267.
Fish, 84.
Marsh, 136, 267, 302.
Pigeon, 267.
Red-shouldered, 197, 270.
Red-tailed, 105, 136, 267.
Sennett's White-tailed, 48.
Sharp-shinned, 136, 267, 302.
Sparrow, 136, 268, 302.
Swainson's, 267, 302.
Western Red-tail, 267, 302.
Hazard, R. G., breeding habits of the King Penguin (*Aptenodytes longirostris*), 280.
Heleodytes affinis, 48, 210, 211, 212.
brunneicapillus, 48, 211.
brunneicapillus bryanti, 212.
Helminthophila bachmani, 333.
celata, 269, 307.
celata lutescens, 220.
chrysoptera, 83.
lawrencii, 259.
leucobronchialis, 79.
Helminthophila luciæ, 217.
peregrina, 83.
pinus, 259, 260.
Helmitherus vermivorus, 222.
Hemiphaga, 233.
Hemiprocne zonaris, 125.
Hen, Attwater's Prairie, 46, 130.
Clucking, 122.
Heath, 69.
Mangro', 122.
Southern Prairie, 130.
Henicorhina pittieri, 245.
Henshaw, H. W., an ingenious pair of House Finches, 255.
Heron, Black-crowned Night, 183.
Great Blue, 135, 302.
Green, 136.
Night, 136.
Snowy, 183.
Yellow-crowned Night, 177.
Hesperocichla nævia, 258, 260.
Hierococcyx, 233.
Himantopus mexicanus, 122.
Hine, Jane L., observations on the Ruby-throated Hummingbird, 253.
Hirundo, 236.
Histrionicus histrionicus, 69, 323.
Homer, F. LeRoy, the Carolina Wren in winter in Mercer County, Pennsylvania, 330.
Homoptila, 61.
brachyptera, 62.
reichenbachi, 61.
verreauxi, 62.
Honey-sucker, 142.
Hornbill, 235.
Howell, Arthur H., notes on some Long Island Birds, 82.
Hummer, 125.
Hummingbird, 137, 244.
Bee, 126.
Broad-tailed, 268.
Calliope, 304.
Ruby-throated, 253.
Hydrochelidon nigra surinamensis, 74, 163.
Hyloterpe, 234.
Hypothymis, 236.

IANTHŒNAS, 233.
Ibis, Scarlet, 324.
Icteria virens, 140, 331.
Icterus bullocki, 305.
cucullatus nelsoni, 220.
gularis yucatanensis, 51.
leucopteryx, 126.

Icterus parisorum, 327.
spurius, 138.
Ingalls, Chas. E., nesting of the Red-bellied Nuthatch in Templeton, Mass., 331.
Iole, 236.
Ionornis, 242.
Irena, 235.

Jack-sparrow, 126.
Jaeger, Parasitic, 96.
Pomarine, 96, 97.
Jay, Arizona, 220.
Black-headed, 304.
Blue, 101, 103, 137, 260.
California, 220.
Long-crested, 217, 268.
Piñon, 260, 269
Rocky-mountain, 268, 304.
Woodhouse's, 268.
John-che-wit, 127.
Jouy, Pierre Louis, notice of his paper on birds of Central Mexico, 245; obituary notice of, 262.
Junco annectens, 216, 217, 269, 306.
caniceps, 217, 269.
hyemalis, 188, 217.
hyemalis pinosus, 47, 265, 266.
hyemalis shufeldti, 269, 306.
hyemalis thurberi, 217.
pinosus, 47, 266.
Junco, 182, 215, 216.
Gray-headed, 269.
Pink-sided, 269, 306.
Point Pinos, 47, 265.
Shufeldt's, 269, 306.
Slate-colored, 30, 215.

Kellogg, V. L., notes on Kansas Birds, 260.
Kennard, Fred. H., the habits and individualities of the Red-shouldered Hawk (*Buteo lineatus*) in the vicinity of Brookline, Mass., 197; the young of the Red-shouldered Hawk (*Buteo lineatus*), 270.
Killdeer, 30, 102, 302.
Kimcoll, F. H., change of habits in our native birds, 261.
Kingbird, 135, 137, 304.
Gray, 178.
Kingfisher, 136.
Belted, 96, 303.
Ringed, 177.
Kinglet, Ruby-crowned, 308.
Kinglet, Western Golden-crowned, 308.
Knowlton, F. H., see Richmond, Chas. W.
Kohn, Gustave, Missouri Titlark in Louisiana, 181.

Lagopus alleni, 177.
lagopus, 177.
rupestris, 194.
scoticus, 177.
Lalage, 233.
Lampornis mango, 125.
Lanius, 233.
borealis, 329.
ludovicianus, 70, 139.
ludovicianus excubitorides, 307.
Lark, Desert Horned, 304.
Horned, 215, 217, 244.
Prairie Horned, 105, 106, 107, 326.
Larus argentatus smithsonianus, 68, 73, 84.
atricilla, 120.
californicus, 301.
philadelphia, 182.
Lawrence, R. H., the California Vulture in the San Gabriel Range, 76; the Western Winter Wren in southern California, 181.
Lepidogrammus, 233, 234.
Leptoptila, 61.
albifrons, 61, 62.
brachyptera, 50, 61, 62.
erythrothorax, 61.
fulviventris, 62.
jamaicensis, 61.
Limnogeranus, 242.
Limnopardalus rytirhynchus, 243.
vigilantis, 243.
Limosa hæmastica, 163.
Livermore, J., the Yellow-crowned Night Heron in Rhode Island, 177.
Lockwood, Rev. Samuel, obituary notice of, 189.
Locustella, 233.
hondoensis, 170.
Loggerhead, 124.
Longspur, Lapland, 180.
Loomis, Leverett M., a further review of the Avian Fauna of Chester Co., South Carolina, 26, 94; the Bobolink on the coast of South Carolina, 355; Point Pinos Junco (*Junco hyemalis pinosus*), 265.

Loon, 69.
Lophotriccus subcristatus, 66.
Lophotriorchis, 233.
Loriculus, 234, 235.
chrisonotus, 235.
hartlaubii, 235.
mindorensis, 235.
philippensis, 235.
regulus, 235.
siquijorensis, 235.
worcesteri, 235.
Lowe, Willoughby P., a list of the birds of the Wet Mountains, Huerfano County, Colorado, 266; the Scarlet Ibis (*Guara rubra*) in Colorado, 324.
Loxia curvirostra, 244.
curvirostra minor, 305.
Loxigilla violacea, 126.
Lucas, Frederick A., the tongue of the Cape May Warbler, 141.
Lyncornis, 233.

MACKAY, George H., habits of the Double-crested Cormorant (*Phalacrocorax dilophus*) in Rhode Island, 18; further news of the Gull 'Dick,' 73; the 1893 migration of *Charadrius dominicus* and *Numenius borealis* in Massachusetts, 75; stray notes from Massachusetts, 84; correction, 175; notes on certain Water-Birds in Massachusetts, 223; the Northern Phalarope—a correction, 324.
Macronus, 234.
Macropteryx, 233.
Macropygia, 235.
Macrorhamphus griseus, 122.
Magpie, American, 268, 304.
Black-billed, 216.
Mallard, 102, 104, 301.
Martin, Purple, 139.
Matthews, R. S., Baird's Sandpiper near Washington, D. C., 325.
May-bird, 124.
McIlwraith, Thomas, notice of a new edition of his 'Birds of Ontario,' 190, 240.
Meadowlark, 35, 102, 103, 138, 215, 305.
Western, 70.
Mearns, E. A., explorations by, 341.
Meatbird, 304.
Meathawk, 304.
Megalurus, 238.
palustris, 238.
ruficeps, 238.
Megapodius, 233, 234.
Megascops asio, 136.
asio aikeni, 46, 47.
asio kennicottii, 49.
asio macfarlanei, 47.
asio maxwelliæ, 268.
asio saturatus, 49.
flammeola, 77.
pinosus, 39.
ridgwayi, 40.
Melanerpes torquatus, 260, 268, 303.
Melanopitta, 238.
sordidus, 238.
steerii, 238.
Meleagris gallopavo, 69.
Mellisuga minima, 126.
Melopelia leucoptera, 123.
Melospiza fasciata, 139.
fasciata mexicana, 67.
fasciata montana, 216, 306.
lincolni, 50, 181, 306.
lincolni striata, 50.
Merganser serrator, 225, 301.
Merganser, Red-breasted, 183, 225. 260, 301.
Mergus serrator, 183.
Merlin, Richardson's, 267, 303.
Merops, 236.
bicolor, 237.
philippinus, 237.
Merriam, C. Hart, the Water Ouzel in the Coast Range south of Monterey, California, 258.
Merula, 233.
migratoria, 140.
migratoria propinqua, 216, 270, 308.
Microhierax, 233.
Micropus, 233.
melanoleucus, 268.
Middendorff, Dr. Alexander Theodor von, obituary notice of, 264.
Miller, Gerrit S., Jr., the Plumbeous Vireo in Central New York, 79; the Ground Cuckoo of Andros Island, 164; *Dryobates scalaris lucasanus* in San Diego County, California, 178.
Miller, Olive Thorne, popular *vs.* scientific ornithology, 85; notice of her 'A Bird-lover in the West,' 243.
Milvulus forficatus, 222.
Mimus hillii, 119, 127.
orpheus, 127.

Mimus polyglottos, 69, 134, 220, 258.
Minor ornithological publications, 67.
Mirafra, 233.
Mitchell, Robert H., capture of Clarke's Nutcracker in Crittenden County, Arkansas, 327.
Mixornis, 235.
Mniotilta varia, 139.
Mockingbird, 34, 104, 140, 222, 258.
Molothrus ater, 138, 305.
Monticola, 233.
Morris, Robert O., rare visitants to the Connecticut Valley in 1893, 181.
Motacilla, 233.
Mulleripicus, 234.
Munia, 235.
Murre, California, 95, 96, 97.
Murrelet, Marbled, 96, 97.
Muscicapa, 233.
Myadestes townsendi, 217, 270.
Myiarchus crinitus, 137.
inquietus, 66, 67.
stolidus, 126.
yucatanensis, 71, 168.
Myristicivora, 233.
Myrmelastes lawrencii, 171.

Nehrling, Henry, notice of his 'Our Native Birds of Song and Beauty,' 166.
Nelson, E. W., and T. S. Palmer, descriptions of five new birds from Mexico, 39.
Newton, A., notice of his 'Dictionary of Birds,' Part II, 56.
Nighthawk, 137.
Western, 268, 303.
Nightingale, 127.
English, 127.
French, 127.
Spanish, 127.
Ninox, 236.
lugubris, 236.
philippensis, 236.
Nonpareil, 222.
Norton, A. H., *Xanthocephalus xanthocephalus* and *Spiza americana* in Maine, 78.
Nucifraga caryocatactes, 179.
columbiana, 179, 305, 327.
multiguttata, 179.
multipunctata, 179.
Numenius borealis, 75.
longirostris, 302.
Nutcracker, Clarke's, 260, 305, 327.
Nuthatch, Brown-headed, 101.
Pygmy, 270.
Red-breasted, 38, 270, 307, 331.
Slender-billed, 270, 307.
Nyctala acadica, 77, 183.
Nyctea nyctea, 183.
Nyctibius jamaicensis, 125.
Nycticorax nycticorax nævius, 121, 122, 136, 183.
violaceus, 121, 177, 333.

Oceanodroma markhami, 170.
melania, 169, 170.
townsendi, 169, 170, 321.
Ogilvie-Grant, W. R., notice of his 'Catalogue of the Game Birds in the British Museum,' 171.
Oidemia deglandi, 183.
Old-squaw, 111.
Olor columbianus, 74.
Oreortyx pictus, 68, 193, 194, 195.
pictus plumiferus, 195.
Oriole, Baltimore, 110, 215.
Bullock's, 305.
Orchard, 138.
Scott's, 327.
Oriolus, 234.
Oroscoptes montanus, 307.
Orthotomus, 236.
Ortygometra, 317.
Ortygops, 242, 317.
Osmotreron, 236, 237.
vernans, 237.
Osprey, 136, 322.
American, 303, 320.
Otocoris alpestris arenicola, 217, 244, 304.
alpestris lucolæma, 244.
alpestris pallida, 168.
alpestris praticola, 326.
alpestris rubea, 168, 219.
Ouzel, Water, 258.
Ovenbird, 91, 134, 140.
Owl, Aiken's Screech, 46.
American Barn, 320.
Barn, 253.
Flammulated, 78.
Great-horned, 136.
Horned, 217.
Long-eared, 303.
MacFarlane's Screech, 47.
Pygmy, 268.
Rocky Mountain Screech, 268.
Saw-whet, 77, 183.
Screech, 124, 136, 261.

Owl, Short-eared, 38, 136.
Snowy, 69, 100, 106, 107, 183.
Western Horned, 268.
White, 124.
Oxycerca, 235.

PADDA, 233.
Palmer, T. S., see Nelson, E. W.
Palmer, William, plumages of the young Hooded Warbler, 282; four additions to the birds of the Virginias, 333; the Ruff and Western Sandpiper near Washington, D. C., 325; an Asiatic Cuckoo on the Prybilof Islands, Alaska, 325.
Palmer, E. D., capture of another Flammulated Owl in California, 78.
Pandion, 233.
haliaëtus carolinensis, 84, 136, 303.
Panyptila cayennensis, 171.
Parrot, Racquet-tailed, 239.
Partridge, Chukor, 70.
Common, 129.
Gambel's, 128.
Plumed, 101.
Parula, 133.
Parus, 235.
atricapillus septentrionalis, 270, 308.
bicolor, 140.
carolinensis, 140.
carolinensis agilis, 261.
gambeli, 270, 308.
hudsonicus columbianus, 47.
hudsonicus evura, 49.
hudsonicus ungava, 49.
inornatus griseus, 270.
Passer, 233.
Passerina amœna, 222, 306.
ciris, 222.
cyanea, 139.
Patoo, 125.
Pavoncella pugnax, 325.
Pediocætes phasianellus, 68.
phasianellus campestris, 302.
phasianellus columbianus, 68.
Pelargopsis, 234.
Pelecanus fuscus, 85.
Pelican, Brown, 85.
Penelopides, 234.
affinis, 236.
basilanica, 236.
manillæ, 236.
Penelopides mindorensis, 236.
panini, 235.
samarensis, 236.
Penguin, King, 280.
Pericrocotus, 234.
Pernis, 233, 234.
Perisoreus canadensis capitalis, 268, 304.
Perissoglossa, 140, 144.
Petchary, 126.
Petrel, Black-capped, 241.
Jamaican, 119.
Storm, 169.
Townsend's, 322.
Wilson's, 101.
Petrochelidon fulva, 127.
lunifrons, 139, 306.
Peucæa notostica, 67.
ruficeps boucardi, 221.
Pewee, 137.
Black, 218.
Western Wood, 268, 304.
Phainopepla nitens, 219.
Phabotreron, 236.
amethystina, 237.
Phalacrocorax carbo, 21, 163.
dilophus, 18.
Phalænoptilus nuttalli, 268.
Phalaridion, 317.
Phalarope, Northern, 27, 29, 96, 110, 227, 250, 302, 324.
Red, 181, 225, 226, 227.
Wilson's, 110.
Phalaropus lobatus, 74, 226, 227, 302.
Phasianus nycthemerus, 70.
pictus, 70.
torquatus, 70.
Pheasant, Mongolian, 70.
Philentoma, 234.
Philohela minor, 84, 136, 291.
Phlogœnas, 235.
Phœbe, 137.
Say's, 304.
Phylloscopus, 233.
Pica pica hudsonica, 268, 304.
Picicorvus, 179.
columbianus, 179, 260, 269, 327.
Picoides americanus dorsalis, 268, 303.
arcticus, 303.
Picumnus obsoletus, 66.
Pigeon, 234.
Band-tailed, 267.
Bronzed, 239.
Ground, 236.
Passenger, 38, 115.

Pigeon, Wild, 70.
Pinicola enucleator, 305.
enucleator + Carpodacus purpureus, 1.
Pipilo, 216.
aberti, 218.
chlorurus, 220, 269, 306.
erythropthalmus, 139, 244.
fuscus mesoleucus, 216, 220, 269.
maculatus arcticus, 306.
maculatus megalonyx, 216, 244.
orizabæ, 161.
Pipit, American, 101, 105, 111, 307.
Sprague's, 80.
Piranga ludoviciana, 260, 269, 306.
Pitangus caudifasciatus, 67, 124, 126.
jamaicensis, 67.
Pitta angolensis, 63.
arcuata, 63.
celebensis, 243.
concinna, 243.
koeki, 243.
loriæ, 243.
maxima, 62.
moluccensis, 62, 63.
nepalensis, 243.
oatesi, 63.
rosenbergi, 63.
rubrinucha, 243.
sordida, 63.
steerii, 243.
venusta, 62.
Pitta, Blue-tailed, 243.
Celebes, 243.
Nepal, 243.
Platypsaris aglaiæ, 169.
Plover, American Golden, 75, 76, 102, 109.
Black-bellied, 183, 227.
Golden, 68.
Gray, 123.
Guinea-hen, 122, 123.
Podilymbus podiceps, 119.
Poliolophus, 235.
Polioptila cærulea, 140.
Polyoaëtus, 233.
Poocætes gramineus, 139.
gramineus confinis, 305.
Poorwill, 268.
Porphyrula, 242.
martinica, 242.
Porzana, 317.
carolina, 302.
cinereiceps, 171.
galapagoensis, 243.
Porzana jamaicensis, 260.
leucogaster, 171.
Pratincola, 233.
Prioniturus, 234.
Prionochilus, 235.
Procellaria brevipes, 170.
torquata, 170.
Progne dominicensis, 127.
subis, 68, 139, 164.
subis hesperia, 171.
Psaltriparus melanotis iulus, 245.
plumbeus, 218, 219, 270.
Pseudolalage, 234.
Psittacus carolinensis, 49.
Ptarmigan, 177.
Ptilocichla, 235.
Ptilocolpa, 233.
Ptilopus, 236.
Ptiloxena, 67.
Publications Received, 71, 173, 249, 319.
Puffinus auduboni, 85.
gavia, 322.
major, 85.
Pycnonotus, 235.
Pyrocephalus rubineus mexicanus, 218.
Pyrrhocentor, 233.

Quail, 123.
Blue, 221.
California, 70.
Japanese, 320.
Spanish, 127.
Quiscalus æneus, 333.
crassirostris, 126.
quiscula, 138.
quiscula æneus, 70.
Quit, Blue, 127.
Quok, 121.

Ragsdale, George H., obliteration of the tarsal scutella in *Accipiter cooperi* in Texas, 251; temperature and nest-building, 260.
Rail, Black, 260.
King, 136.
Rain-bird, 125, 127.
Raine, Walter, notice of his 'Bird-Nesting in North-West Canada,' 247.
Rallina, 317.
Rallites, 317.
Rallus beldingi, 242.
caribæus, 242.
coryi, 242.

Rallus crepitans, 242.
elegans, 136, 242.
equatorialis, 242, 243.
gularis, 74.
longirostris, 242.
longirostris caribæus, 122.
longirostris cubanus, 67, 242.
obsoletus, 242.
saturatus, 242.
scottii, 242.
virginianus, 163.
Ramphocelus, 66.
Ramphocœlus, 66.
atrosericeus capitalis, 66.
Raven, 137, 269.
White-necked, 220.
Red-legs, 122.
Redpoll, 108, 333.
Redstart, 134, 140.
American, 307.
Regulus calendula, 67, 308.
satrapa olivacea, 308.
Rhipidura, 233.
Rhynchophanes mccowni, 216.
Rhynchopsitta pachyrhyncha, 66.
Richmond, Chas. W., notice of his paper on a collection of birds from Eastern Nicaragua and Rio Frio, Costa Rica, 170.
Richmond, Chas. W., and F. H. Knowlton, birds of South Central Montana, 298.
Ridgway, Robert, note on *Rougetius aldabranus*, 74; on geographical variation in *Sialia mexicana* Swainson, 145; notice of his paper on the genus *Myiarchus*, 168; notice of his paper on a small collection of birds from Costa Rica, 169; notice of his paper on a collection of birds made in Alaska, 169; notice of his paper on a new Storm Petrel from the coast of Western Mexico, 169; notice of his revision of the genus *Formicarius* Boddaert, 169; *Picicorvus* an untenable genus, 179; geographical, versus sexual, variation in *Oreortyx pictus*, 193; *Colinus virginianus cubanensis* not a Florida Bird, 324.
Rissa tridactyla, 162.
Road-runner, 220, 221, 268.
Robin, 30, 68, 71, 102, 104, 106, 109, 135, 140, 215.
Western, 216, 270, 308.
Robin-red-breast, 124.
Robinson, Wirt, taming Chipping Sparrows, 328.
Rougetius abbotti, 74.
aldabranus, 74.
bernieri, 74.
gularis, 74.
Ruff, 325.
Rynchops nigra, 162, 181.

Sage, Jno. H., notes on some Connecticut Birds, 181.
Salpinctes obsoletus, 222, 269, 307.
Salvadori, T., notice of his Catalogue of Pigeons, 60.
Sanderling, 122, 183, 225.
Sandpiper, Baird's, 301, 325.
Least, 98, 122, 301, 325.
Semipalmated, 98.
Spotted, 136, 302.
Western, 95, 325.
Western Solitary, 302.
Sapsucker, 178.
Red-naped, 268, 303.
Williamson's, 268, 303.
Sarcophanops, 235.
Sarcops, 233, 234.
Sarothrura, 317.
Saurothera andria, 164, 165.
bahamensis, 164, 165.
vetula, 124.
Sayornis phœbe, 137.
saya, 216, 304.
Scaup, 225.
Schrenck, Dr. Leopold von, obituary notice of, 264.
Scolecophagus atroviolaceus, 67.
cyanocephalus, 305.
Scops, 233, 234.
Scoter, Surf, 97.
White-winged, 97, 183.
Scytalopus argentifrons, 169.
Seiurus aurocapillus, 70, 91, 140.
Selasphorus platycercus, 244, 326.
Setaria, 234.
Setophaga ruticilla, 140, 307.
Sewy-sewy, 127.
Sharpe, R. Bowdler, notice of his paper on the 'Zoögeographical Areas of the World,' 63; notice of his Catalogue of the Fulicariæ and Alectorides, 242.
Shearwater, Audubon's, 85.
Black-vented, 97.
Dark-bodied, 30, 96, 97.
Greater, 85.
Pink-footed, 30, 96.

Shine-eye, 126.
Short, Ernest H., notice of his birds of Western New York, 168.
Shrike, Logger-head, 139.
Northern, 248, 329.
White-rumped, 220, 221, 307.
Shufeldt, R. W., notes on photographing a live specimen of Gambel's Partridge, 128; random notes on some of the parasites of birds, 186; notice of his 'Comparative Oölogy of North American Birds,' 314.
Shufeldt, R. W., and Miss M. R. Audubon, the last portrait of Audubon, together with a letter to his son, 309.
Sialia arctica, 69, 216, 270, 308.
cæruleocollis, 148, 155.
mexicana, 145, 146, 150, 151, 154, 155. 270.
mexicana anabelæ, 145, 150, 159.
mexicana bairdi, 148, 149, 150, 157.
mexicana occidentalis, 145, 148, 149, 150, 156.
sialis, 140.
Siphia, 234.
Siskin, Pine, 38, 305.
Sitta, 235.
canadensis, 270, 307, 331.
carolinensis, 140.
carolinensis aculeata, 270, 307.
mexicana, 45.
pygmæa, 270.
Skillen, James, the change from winter to spring plumage in the male Bobolink (*Dolichonyx oryzivorus*), 180.
Skimmer, Black, 181.
Skua, Great, 174.
Southern, 282.
Snipe, Wilson's, 102, 301.
Snowflake, 101, 103, 109.
Solitaire, Townsend's, 270.
Somateria dresseri, 69, 223, 323.
spectabilis, 69, 223, 323.
Sora, 302.
Sparrow, Black, 126.
Brewer's, 218, 219, 306.
Chipping, 139, 256, 328.
English, 216, 261.
Field, 102, 139.
Fox, 215.
Grasshopper, 34.
Harris's, 183.
Sparrow, Henslow's 34, 139.
Intermediate, 306.
Jack, 126.
Leconte's, 34, 102, 256, 332.
Lincoln's, 306.
Mountain Song, 306.
Nelson's, 333.
Savanna, 66.
Sea-side, 139.
Sharp-tailed, 139.
Song, 30, 102, 139, 215.
Tree, 301.
Vesper, 111, 139, 218.
Western Chipping, 218, 306.
Western Grasshopper, 305.
Western Lark, 306.
Western Savanna, 305.
Western Vesper, 305.
Western White-crowned, 218.
White-throated, 102, 182.
Yellow-winged, 139.
Spatula clypeata, 84.
Speotyto cunicularia hypogæa, 222.
Sphyrapicus thyroideus, 268, 303.
varius nuchalis, 222, 268, 303.
Spilornis, 234.
Spindalis nigricephala, 127.
Spinus pinus, 269, 305.
psaltria, 69.
psaltria croceus, 245.
tristis, 69, 138, 305.
Spiza americana, 78, 79, 119, 126.
Spizaëtus, 233.
Spizella breweri, 306.
monticola ochracea, 301.
pusilla, 139.
socialis, 69, 139, 256, 328.
socialis arizonæ, 306.
Starling, 234.
Steere, J. B., the distribution of genera and species of non-migratory land birds in the Philippines, 231.
Stejneger, Leonhard, notice of his 'Notes on Japanese Birds in the Science College Museum, Tokoyo, Japan,' 170.
Stelgidopteryx serripennis, 139, 308.
Stellula calliope, 304.
Stercorarius catarrhactes, 174.
Sterna americana, 119.
anæthetus, 119.
antillarum, 183, 259.
fuliginosa, 120.
hirundo, 16, 120.
maxima, 85, 120.
sandvicensis acuflavida, 120.

Sterna tschegrava, 85.
Stone, Witmer, summer birds of the Pine Barrens of New Jersey, 133; capture of *Ceryle torquata* at Laredo, Texas, 177; some summer birds of the Pocono Mountains, Pennsylvania, 182; notice of his 'Revision of the Genus *Anous*,' 317; notice of his 'Review of the Old World Rallinæ,' 317.
Strix, 233.
flammea furcata, 124.
pratincola, 253.
Sturnella magna, 138.
magna neglecta, 305.
Sturnia, 233.
Surber, Thaddeus, capture of the Golden Eagle at Covington, Virginia, 77.
Surnia ulula caparoch, 301.
Surniculus, 234.
Swallow, Bank, 306.
Barn, 102, 139, 306.
Cliff, 139, 306.
Rough-winged, 139, 218, 308.
Tree, 133, 135, 139, 306.
Violet-green, 269, 301.
Swan, Whistling, 74.
Swift, Chimney, 110, 137.
White-throated, 186, 268.
Sylvania canadensis, 182.
microcephala, 244.
mitrata, 84. 140, 282.
pusilla, 50, 181, 269.
pusilla pileolata, 50, 307.
Sylvia occidentalis, 154.
Symphemia semipalmata inornata, 302.

Tachycineta bicolor, 139, 306.
thalassina, 269, 301.
Tachyphonus rubifrons, 169.
Tallowhead, 304.
Tanager, Cooper's, 222.
Crimson-headed, 269.
Louisiana, 110, 260, 306.
Tanagra palmarum, 171.
palmarum melanoptera, 171.
Tanygnathus, 238.
everettii, 238.
luconensis, 238.
Tatler, Wandering, 95.
Teal, Cinnamon, 260.
Green-winged, 301.
Tern, 259.
Black, 73, 74.
Bridled, 120.
Tern, Caspian, 85.
Common, 16.
Least, 183.
Noddy, 120.
Roseate, 120.
Royal, 85.
Sooty, 120.
Thalassidroma melania, 169.
Thompson, Ernest E., hybrid *Pinicola enucleator* + *Carpodacus purpureus*, 1.
Thrasher, Bendire's, 219.
Brown, 140.
Curved-billed, 219.
Palmer's, 219.
Sage, 307.
Triponax, 234.
Thrush, Audubon's Hermit, 270, 308.
Gray-cheeked, 104, 110.
Hermit, 66, 104.
Olive-backed, 308.
Varied, 258, 260.
Wood, 140.
Thryothorus ludovicianus, 140, 330.
Tiga, 233, 234.
Titlark, Missouri, 181.
Titmouse, Black-capped, 215.
Gray, 270.
Tufted, 140.
Todus viridis, 124.
Tom-fool, 126.
Totanus flavipes, 123, 301, 325.
melanoleucus, 123, 302.
solitarius cinnamomeus, 302.
Towhee, 38, 134, 244.
Arctic, 306.
Cañon, 216, 218, 219, 220, 269.
Green, 220.
Green-tailed, 269, 306.
Treat, Willard E., *Phalaropus lobatus* — a correction, 74.
Treron, 233.
Tringa bairdii, 301, 325.
canutus, 163, 259.
fuscicollis, 163, 259.
maculata, 325.
minutilla, 122, 301.
Trochilus colubris, 137, 244.
platycercus, 268.
Troglodytes aëdon, 69, 140, 164.
aëdon aztecus, 219, 269, 307.
hiemalis pacificus, 169, 181.
Trogon chrysomelas, 171.
Turdus aonalaschkæ, 66, 244.
aonalaschkæ auduboni, 270, 308.

Turdus aonalaschkæ pallasii, 182.
fuscescens, 335.
fuscescens salicicola, 222.
mustelinus, 140.
ustulatus, 244.
ustulatus swainsonii, 308.
Turnix, 233.
Turnstone, 226.
Turtur, 236.
Tyler, Martha G., the Barn Owl in Northern Vermont, 253.
Tympanuchus americanus, 68, 69.
americanus attwateri, 46, 130.
attwateri, 46, 70.
Tyrannus dominicensis, 14, 126 178.
tyrannus, 137, 304.
vociferans, 219.

Uria lomvia, 175.
Urinator imber, 69.
lumme, 164.

Verrill, A. H., and G. E., notice of their notes on the fauna of the Island of Dominica, 246.
Vireo calidris, 14, 127, 246.
gilvus, 307.
gilvus swainsoni, 50.
huttoni insularis, 51.
huttoni obscurus, 51.
modestus, 127.
noveboracensis, 139.
olivaceus, 139, 334, 335.
philadelphicus, 181.
solitarius cassini, 220.
solitarius plumbeus, 79, 162, 269.
swainsoni, 50.
Vireo, 215.
Orange-crowned, 307.
Plumbeous, 79, 269.
Red-eyed, 139, 334.
Warbling, 307.
White-eyed, 134, 139.
Voorhees, Clark Greenwood, Connecticut notes, 259.
Vulture, California, 76.
Turkey, 136, 250, 267, 302.

Wallace, Alfred Russel, notice of his paper on the Palæarctic and Nearctic Regions, 318.
Warbler, Audubon's, 221, 269, 307.
Bachman's, 333.
Black-and-White, 109, 139.
Warbler, Blackburnian, 26, 27.
Black-capped Flycatching, 220.
Black-poll, 79, 109.
Black-throated Blue, 27, 183, 260.
Canadian, 27, 29.
Cape May, 141.
Chestnut-sided, 26.
Golden-winged, 83.
Hooded, 84, 133, 140, 282.
Kirtland's, 258.
Lucy's, 217, 218, 219.
Macgillivray's, 269, 307.
Myrtle, 103, 111.
Orange-crowned, 109, 269, 307.
Palm, 26, 27, 38, 105, 181, 333.
Parula, 15, 134, 139.
Pileolated, 307.
Pine, 15, 104, 105, 134, 140.
Pine-creeping, 15.
Prairie, 133, 134, 140.
Prothonotary, 320.
Tennessee, 83.
Townsend's, 269.
Western Yellow, 221.
Wilson's, 181, 269.
Yellow, 104, 109, 140, 307.
Yellow Palm, 26.
Yellow-throated, 31, 109.
Warren, Oscar B., *Calcarius lapponicus* in winter at Palmer, Marquette Co., Michigan, 180.
Water-thrush, Grinnell's, 109.
Louisiana, 101.
Watson, Amelia M., taming of a Chipping Sparrow, 256.
Waxwing, Bohemian, 108.
Cedar, 307.
Wayne, Arthur T., Sprague's Pipit (*Anthus spragueii*) on the coast of South Carolina, 80; effect of the great cyclone of August 26–27 upon certain species of birds, 85; notes on the capture of the Gray Kingbird (*Tyrannus dominicensis*) near Charleston, South Carolina, 178; notes on the distribution of the Bobolink in South Carolina, 179; Leconte's Sparrow in large numbers near Charleston, South Carolina, 256; the Sandhill Crane (*Grus mexicana*),—a correction, 324.
Western Pennsylvania Ornithological Society, 191.

Whip-poor-will, 137, 253.
White-belly, 123.
White, Francis Beach, Turkey Vulture in eastern Massachusetts, 250.
Whitehead, 304.
White-wing, 123.
Whitfield, R. P., the food of Wild Ducks, 323.
Willet, Western, 302.
Woodcock, 68, 69, 70, 136, 291.
American, 32, 84.
Woodpecker, 37, 124.
Alpine Three-toed, 268, 303.
Arctic Three-toed, 303.
Batchelder's, 268.
Cabanis's, 303.
California, 220.
Downy, 137, 215.
Hairy, 136.
Lewis's, 260, 268, 303.
Mountain Downy, 303.
Pileated, 137, 174.
Red, 239.
Red-headed, 37.
Wren, Bewick's, 34, 36.
Cactus, 210, 214, 220.
Cañon, 269.
Carolina, 34, 140, 330.
House, 140.
Long-billed Marsh, 80, 140.
Rock, 218, 222, 269, 307.
Western Bewick's, 220.
Western House, 269, 307.
Western Winter, 169, 181.
Wren, White-throated, 218.
Winter, 182.
Worthington's Marsh, 47.
Wright, Mabel Osgood, notice of her 'The Friendship of Nature,' 314.

XANTHOCEPHALUS xanthocephalus, 78.
Xantholæma, 234.
Xanthopygia, 233.

YELLOW-LEGS, 301.
Greater, 302.
Yellow-throat, Maryland, 110, 140.
Western, 307.
Young, Curtis Clay, Yellow-bellied Flycatcher (*Empidonax flaviventris*) on Long Island, 78.
Yungipicus, 234.
kizuki, 170.
kizuki seebohmi, 170.

ZAPORNIA, 317.
Zenaida macroura, 136, 267, 302.
zenaida, 123.
Zeocephus, 234.
Zonotrichia albicollis, 335.
leucophrys gambeli, 219.
leucophrys intermedia, 219, 306.
querula, 183, 215.
Zosterops, 235.

ERRATA.

Page 47, line 14, for 'April' read 'Jan.'
" 51, " 4, " 'last' read 'lack.'
" 67, " 10, " '**Myiardius**' read '**Myiarchus**.'
" 77, " 19, " '*Nyctale*' read '*Nyctala*.'
" 89, " 24, " 'Carington' read 'Carrington.'
" 117, " 3 and 6 of footnote, for 'Clark' read 'Field.'
" 120, " 23, for '**sandivicensis**' read '**sandvicensis**.'
" 185, " 18, " '1889' read '1891.'
" 219, " 24, " '*vociferus*' read '*vociferans*.'
" 243, " 22, *dele* common after *Corethura*.
" 268, " 14, for '**orocœcus**' read '**orecœcus**.'
" 325, " 14, for '*pavoncella*' read '*Pavoncella*.'
Plate IV, bottom line, for 'preesing' read 'preening.'

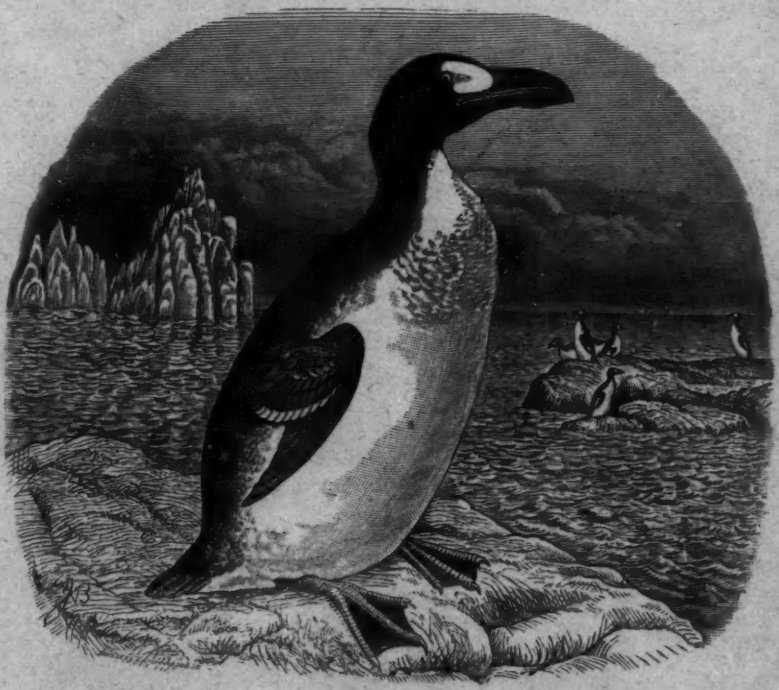
t.p.cv.

Old Series, Vol. XIX } CONTINUATION OF THE BULLETIN OF THE NUTTALL ORNITHOLOGICAL CLUB { New Series, Vol. XI

The Auk

A Quarterly Journal of Ornithology

Vol. XI —OCTOBER, 1894— No. 4



PUBLISHED FOR

The American Ornithologists' Union

NEW YORK

L. S. FOSTER

CONTENTS.

PAGE

POINT PINOS JUNCO (*Junco hyemalis pinosus*). By *Leverett M. Loomis*. (Plate VII.) . 265

A LIST OF THE BIRDS OF THE WET MOUNTAINS, HUERFANO COUNTY, COLORADO. By *Willoughby P. Lowe*. 266

THE YOUNG OF THE RED-SHOULDERED HAWK (*Buteo lineatus*). By *Fred. H. Kennard*. . 270

BREEDING HABITS OF THE KING PENGUIN (*Aptenodytes longirostris*.) By *R. G. Hazard*. (Plate VIII.) 280

PLUMAGES OF THE YOUNG HOODED WARBLER. By *William Palmer*. 282

NOTES AND SONG-FLIGHT OF THE WOODCOCK (*Philohela minor*). By *William Brewster*. 291

BIRDS OF SOUTH-CENTRAL MONTANA. By *Chas. W. Richmond* and *F. H. Knowlton*. . 298

THE LAST PORTRAIT OF AUDUBON, TOGETHER WITH A LETTER TO HIS SON. By *Dr. R. W. Shufeldt* and *Miss M. R. Audubon*. (Plate IX.) 309

RECENT LITERATURE.—Mrs. Wright's 'The Friendship of Nature,' 314; Shufeldt's 'Comparative Oölogy of North American Birds,' 314; Shufeldt's 'Scientific Taxidermy for Museums,' 316; Stone's Revision of the Genus *Anous*, 317; Stone on the Old World Rallinæ, 317; Wallace on 'Palæarctic' and 'Nearctic,' 318; Publications Received, 319.

GENERAL NOTES.—*Oceanodroma townsendi* off San Diego, California, 321; The Canada Goose and the Osprey laying in the same Nest, 322; The Food of Wild Ducks, 323; The Scarlet Ibis (*Guara rubra*) in Colorado, 324; The Sandhill Crane (*Grus mexicana*),—a Correction, 324; The Northern Phalarope,—a Correction, 324; *Colinus virginianus cubanensis* not a Florida Bird, 324; Baird's Sandpiper near Washington, D. C., 325; The Ruff and Western Sandpiper near Washington, D. C., 325; An Asiatic Cuckoo on the Pribylof Islands, Alaska, 325; The Capture of *Basilinna leucotis* in Southern Arizona, 325; Breeding of the Prairie Horned Lark, (*Otocoris alpestris praticola*) near Pittsfield, Mass., 326; Capture of Clarke's Nutcracker in Crittenden County, Arkansas, 327; Occurrence of *Aphelocoma cyanotis* in Western Texas, 327; *Icterus parisorum* in Western San Diego County, California, 327; Taming Chipping Sparrows, 328; Note on the Habits of the Northern Shrike (*Lanius borealis*), 329; The Carolina Wren in Winter in Mercer County, Pennsylvania, 330; The Yellow-breasted Chat in Maine, 331; Nesting of the Red-bellied Nuthatch in Templeton, Mass., 331; Notes from Raleigh, N. C., 332; Four Additions to the Birds of the Virginias, 333; Irregular Abundance of Birds in the Breeding Season in Different Years at the Same Locality, 334.

CORRESPONDENCE.—Parasites of Birds, 336; Notes on the Steganopodes, and on Fossil Birds Eggs, 337.

NOTES AND NEWS.—Twelfth Congress of the American Ornithologists' Union, 339; New Ornithological Publications, 339; Ornithological Explorations, 340; 'Bird Day' in Schools, 342. Birds and Bonnets, 342.

'THE AUK,' published as the Organ of the AMERICAN ORNITHOLOGISTS' UNION, is edited by Dr. J. A. ALLEN, with the assistance of Mr. F. M. CHAPMAN.

TERMS:—$3.00 a year, including postage, strictly in advance. Single numbers, 75 cents. Free to Honorary Members, and to Active and Associate Members of the A.O.U. not in arrears for dues.

Subscriptions and Advertisements should be addressed to the publisher, L. S. FOSTER, 35 PINE STREET, NEW YORK, N. Y. Foreign Subscribers may obtain 'THE AUK' through GURNEY AND JACKSON, 1 PATERNOSTER ROW, LONDON.

All articles and communications intended for publication, and all books and publications for notice, should be sent to Dr. J. A. ALLEN, AMERICAN MUSEUM OF NATURAL HISTORY, CENTRAL PARK, NEW YORK CITY.

AUTHORS' SEPARATES.

Authors of general articles will receive **25 separates of their articles gratis**. Additional copies may be ordered, if desired, but *such orders must always accompany the manuscript*. The prices of separates are as follows:

No. of copies.	Number of pages of article.							Covers and Title.
	2	4	8	12	16	24	32	
50	$0.50	$1.00	$1.50	$2.00	$3.00	$4.50	$6.00	$0.50
75	.65	1.15	1.75	2.25	3 25	5.00	6.50	.50
100	.80	1.30	2.00	2.50	3.75	5.50	7.00	.75

MARLIN REPEATING
1891.—RIFLES.—1893.
1889.

MADE in all calibres, lightest, simplest, strongest, and safest on the market. Our mechanism is such that empty shells, shot shells, or shells loaded with light charges can be passed through the action perfectly. Just the rifle for taxidermists or ornithologists.

Our complete catalogue will be sent free on application to

THE MARLIN FIRE ARMS CO.,
NEW HAVEN, CONN.

FOR SALE . . . . .

FOUR PAIRS IVORY-BILLED

WOODPECKERS,

Campephilus principalis,

fine breeding birds from Florida. Also

ONE SPECIMEN OF

ASHY PETREL,
OCEANODROMA HOMOCHROA,

very fine. For prices, address

ARTHUR T. WAYNE,
MOUNT PLEASANT,
SOUTH CAROLINA.